









*RELATION OF A VOYAGE IN THE NORTH SEA, ALONG THE COASTS OF ICELAND, GREENLAND, FERRO, SHETLAND, THE ORCADES, AND NORWAY, MADE IN THE YEARS 1767 AND 1768, BY M. DE KERGUÉLEN TREMAREC, OF THE ROYAL MARINE ACADEMY IN FRANCE, LIEUTENANT, COMMANDER OF THE FRIGATES LA FOLLE AND L'HIRONDELLE.*

PREFACE.

HIS Majesty being desirous that encouragement and protection should be given to the cod fishery on the coast of Iceland, carried on between the months of April and September, the Duc de Praslin, minister and secretary of state for naval affairs, dispatched the frigate *La Folle* to a station off Iceland, to preserve good order among the French fishermen, to protect them, and to furnish them with any succours they might require. Towards the end of January 1767 I received an order at Brest from the Duc de Praslin, to repair to court upon his majesty's service. I set off immediately, arrived at Versailles, and presented myself to the minister, who informed me that he had appointed me to the command of the frigate *La Folle*, of twenty-six guns, and two hundred men, for the object I have before described. Although I must necessarily on this cruise be subject to much fatigue and inconvenience, the novelty of it, and the inclination which from my most tender infancy I had always felt for cruising, occasioned me an indefinable satisfaction. M. Rodier, first clerk in the navy-office, communicated to me sundry documents and regulations relative to the fishery in question. On the same subject I had the honour of seeing the president Ogier, who during his embassy to Denmark obtained considerable information on this branch of commerce, and had amicably settled some disputes which had arose upon the occasion of it. He had the kindness to impart to me all the elucidation I could require: he informed me that the King of Denmark had granted to a company established at Copenhagen the exclusive privilege of trading with Iceland; that every foreign vessel, or even Danish, not belonging to the company, was liable to confiscation if found upon the coasts of Iceland; that the company kept cruisers to maintain its rights, and to capture any vessel infringing them; that these cruisers three years before, had made themselves masters of two ships from Dunkirk, which were sold at Copenhagen; that these two ships had been fishing for cod upon the coast of Iceland, and were surprised in a harbour by the cruisers, with wool and other contraband articles on board, but being ambassador at the time he had reclaimed them, and had them restored with all costs and interest. The Duc de Praslin ordered me to Dunkirk, to confer with the gentlemen of the chamber of commerce on the means of encouraging the fishery, and securing success, by establishing regulations and a discipline by which the men were to abide. After taking the measures necessary at Dunkirk, and choosing two sailors well acquainted with the coasts of Iceland, I returned to Versailles for my last orders from the Duc de Praslin, and proceeded afterwards to Brest to equip my frigate: on the first of April she was taken into dock to be careened; she came out again on the third, and the fourth her equipment began; in order to hasten which, I divided the operation among my officers. M. Duchastel, who was my second lieutenant, had the care of the stowage, and general inspection with M. de la Martilliere, midshipman; lieutenant Le Chevalier Ferron, had the inspection of provisions, with Messrs. Pehan and Le Rouge, midshipmen; M. Lerondel and Le Chevalier Menyveau, midshipmen, looked to the guns and ammunition; and Messrs. Dorvault and Menyveau, senior, to the  
sails

fails and rigging. By the exertions of these officers, whose talents cannot be too highly praised, my frigate was entirely equipped in four days, with six months provision on board. She fell down to the roadstead on the eleventh of April, where I anchored in ten fathoms water, with bottom of mud and sand, mooring her E. S. E. and W. N. W. with a heavy anchor. Being moored, I set Point Porzie at W. quarter S. W. five degrees  $\frac{1}{2}$ , and Round Island at S. quarter S. E. four degrees E. This is the best anchorage in the road; it is called La Fosse, on account of the bottom rising from the middle; but as it is at some little distance from the port, it is mostly frequented by large vessels.

Nothing interesting occurred to me in the road till the twenty-first, when I experienced a heavy gale of wind from the S. S. W. During my stay there I exercised the ship's company in the rigging, and at the great guns. M. Duchastel made out the roll for the watch, and engaging; that for engaging was made after a manner which ought to be generally adopted: it distributed, for example, to the starboard watch the uneven guns, one, three, five, seven, and to the larboard watch the even ones, two, four, six, eight.

By this means a vessel can never be taken by surprise; for the watch on duty on the deck may by night and day serve half the guns: the may prepare on a sudden as well to fire from both sides, on giving the word starboard to the starboard, and larboard to the larboard side. To conclude, the watch may exercise at the guns, without waking those who have turned in.

#### FIRST PART.

##### *Containing the Course from Brest to Iceland.*

I RECEIVED my instructions from court the twenty-sixth of April 1767, and the next day, the twenty-seventh, I left Brest roads at nine in the morning, at the beginning of flood tide, and with a very weak N. E. wind; as I got off the land it became stronger: at five in the evening we made Ushant, bearing E. N. E. five leagues and a half distant. I steered all night W. N. W. to make an offing, and seeing by the weather that the easterly winds were likely to continue, I kept the point ahead at N. N. W., in order to reach Cape Clear. The twenty-eighth, at noon, I was by observation in lat.  $48^{\circ} 46'$ , and long.  $10^{\circ} 3' W.$  from Paris. At sun-set I noticed the variation of the compass to be  $20^{\circ}$  towards the W. The twenty-ninth, at half past eight in the morning, after having run forty-five leagues by the log in the preceding day, I discovered Cape Clear. At ten o'clock, Mizen-head bearing N. N. E. five leagues distant, I founded and found sixty-five fathoms water, the bottom a muddy sand mixed with pebbles. Afterwards I steered N. W. quarter W. On the twenty-ninth, at noon, I found the lat.  $51^{\circ} 5'$ , and long.  $12^{\circ} 24' W.$  M. Boutanguoy, my first pilot, observed  $21^{\circ}$  of variation in the morning. I remarked that Mizen-head was a better land to make for than Cape Clear, on account of its being higher, and more easy to perceive. I took notice of the Schyllings islands, which I found badly laid down in the map of M. Bellin, naval engineer, engraved in 1751. These islands stretch more to the W. and W. S. W. than they are described to do in that chart.

On running from Cape Clear to the Schyllings, I noticed a sensible current to the N. E. After doubling these islands, I kept the Cape at S. S. E. On the thirtieth, at noon, I observed the polar height was  $52^{\circ} 44'$ , and by calculation  $14^{\circ} 54' W.$  longitude from Paris. At noon I steered N. N. E., the wind S. E., but light, and a fine sea.

On the first of May I was by reckoning in lat.  $53^{\circ} 18'$ , and I found it by observation  $53^{\circ} 30'$ , which gave a difference in twenty-four hours of twelve minutes; this could

not have arisen from the log-line, the knots of which were made at a distance of forty-seven feet six inches : this distance is correct, the sea-league being reduced by the gentlemen of the academy of sciences to 2850 toises, from their finding in 1672 that a degree in the celestial sphere was equal to 57030 toises on the earth. If the third part of 2850 be taken, it will give 950 toises of the Chatelet at Paris, or 5700 royal feet, which divided by twelve, yields forty-seven feet and a half, the distance or interval of each knot on the log-line. The difference could not proceed from the half-minute glass either, which I proved the correctness of by comparing them with each other, and by a watch I had which pointed the seconds. These small glasses, the purpose of which is to measure the distance passed over on the log-line during their run, which is half a minute, cannot be proved too frequently, for the change of weather from dry to humid alone may occasion a considerable variation ; and one single second error in half a minute will cause a difference of thirty leagues in a run of a thousand. It would be useless to enter into minutiae on this matter so often noticed, and particularly by M. Dechabert, at present captain of a frigate, who in his *Journal of a Voyage to North America* displays all the causes of errors in navigation. It is sufficient to observe that the 12' difference of the latitude did not arise either from the log-line or the half-minute glasses, but from the currents, which I reckon to run N. E. in this quarter, owing to the bay of Galway, the bearing of the coast, which is N. and S., and the S. W. winds, which almost continually blow in this latitude, all which should necessarily determine the currents running to the N. E.

I found next day again a difference N. between the height by observation and that by reckoning, and perceived tide-banks and sea-weed, the direction of which were N. E. and S. W., which confirmed me in my opinion. I noticed the same day 22° 50' variation at sun-set ; a short time previous to which we had a most pleasing sight. The rays of the sun broken and reflected by dark clouds on the horizon, represented at a distance, apparently of two leagues, a rapid river, which seemed to precipitate itself in cascades of different colours, azure, silver, and gold.

The third, fourth, and fifth, nothing particular occurred ; the winds were variable, and I made most advantageous tacks : until the third, the wind had been S. E.

On the sixth, after keeping all day a N. N. E. course, the wind blowing hard and fresh, with a rough sea, the main and fore-top-sails reefed ; as soon as the evening came on I stood under bare poles, not wishing to make way till day-light, thinking myself five leagues to the S. S. E. of a sand-bank, as described in the Dutch charts. The seventh, at noon, I found myself by observation in lat. 56° 41', and long. 16° 15' W. of Paris.

The eighth, at night, a violent gale of wind came on from the east, with a dreadful sea ; it snowed and hailed, and was colder than what we find it at Paris in the sharpest winters. I then recollected the application made by M. de Frezier in the same circumstances, when doubling Cape Horn, of the thought of Horace :

Meliusne fluctus  
Ire per longos fuit, an recentes  
Carpere flores ?  
Or gives them more delight  
A dangerous voyage o'er the distant main,  
Or gathering flowers from the tranquil plain ?

In truth, there is some difference between the smiling days of May, such as we experience in France, and the rigorous weather we had to undergo ; and when I compared the comfort of a life on shore with a tolerable competency, to the tiresomeness of the

sea, especially in bad weather, I wondered that any man enjoying a sufficiency could be induced to trust himself twice to the mercy of the winds and billows : fortunately for this condition of life, one hour of fair weather obliterates the remembrance of days of danger and toil.

The ninth, we had the same weather, the wind was equally boisterous, and the sea as tremendous as before ; I still kept all sails reefed : once I attempted to set the main-top-gallant and the mizen, in order to pass by day-light the latitude of another bank marked on all the Dutch charts, and the existence of which the experienced pilots I had on board assured me had been verified by the loss of several vessels ; but I was obliged to haul in the main-top-gallant. This bank, according to the Dutch accounts, extends from N. to S. eleven leagues, and from E. to W. about five leagues. I caused it to be marked on our charts. I do not affirm there being any very high shelving or dangerous sand in this position ; but I am persuaded, from the prodigious number of birds, the multitude of them of those species which only resort to shallows, and from the frequent striking of the waves against the vessel, that there is a bank there. Several times during the day, and in the evening, I sounded, but without finding a bottom : when exhausted by the bad weather, and the violent rolling to which we had been subject for two days, I was anxious to get some rest, and laid down, after ordering the officer of the watch to sound at midnight ; which was done. After letting out sixty-five fathoms of line, they cried bottom, because the lead did not draw any longer ; but as the tallow with which the lead is loaded to take the impression of the bottom shewed nothing, they thought they might have been deceived, and did not wake me, which I had ordered them to do, in case of finding bottom. I conjecture that we passed the edge of the bank, and fathomed it, and which persuades me was the case : on examining by day-light the large end of the lead to which the tallow is applied, I found adhering to it some fine grains of sand, the roughness of which was distinguishable by the finger ; and I conceive that the violent agitation of the waves might have washed the lead on heaving it up, and the more easily from the grains of sand being very fine and mixed with mud.

The tenth and eleventh, the same weather still continued, violent east winds and very high sea.

On the eleventh at noon, I was by reckoning in  $61^{\circ} 20'$  latitude, and longitude  $19^{\circ} 30'$  westward of Paris, in the afternoon the wind veered to the S. E. ; it was less impetuous, I deemed the weather notwithstanding too bad to make land, but at four o'clock seeing several vessels called Doggers, which went before the wind to the N. W. ; I judged that they who were fishermen going to Iceland had fallen in the day before, and recognized the isles of Ferro, and satisfied with respect to their position, they bent their course to fall in with the islands of Westerman, which are to the S. of Iceland. The course of these doggers, and the fierceness of the bad weather, engaged me to go before the wind. I did not, like the fishermen, however, keep directly before the wind, but steered N. N. W., in order to make land higher up, that is to say, more to the east than the Westerman islands.

I kept on this tack all night, and until five the next morning, the twelfth of May, when I made cape Heckla ; I then steered W. N. W. for the Westerman islands, which I saw at eight o'clock. I took an altitude at noon, and from the difference of latitude by observation from that of bearings, I found that on the large chart of M. Bellin, published in 1767, the coast was laid down in general  $8'$  more to the S. than what it ought to be. Off cape Heckla, in the morning, we noticed the variation of the compass was  $29^{\circ}$ . I observed that cape Heckla had two points stretching from E. to W. We saw also mount Heckla, which is nearly in the N. W., corrected by the cape. The volcano



of this mountain, one of the most considerable on earth, is known from its frequent, and sometimes terrible, eruptions : towards the close of this journal I shall speak of it more particularly. Between cape Heckla and the Westerman islands the land falls in in the bay, owing to which I understand there is a good anchorage. Above all, behind the western point of cape Heckla there are excellent moorings, well sheltered : to go up them requires a south or westerly wind. There are many passages between the Westerman islands, but they are little known, being unfrequented, except by Iceland fishermen ; nevertheless some fishing smacks lay off there to fish, and I saw a dogger from Dunkirk which had in a week's time caught seventy tons of cod there. A violent current runs between all these islands ; they appeared to me to stretch more to the S. W. than what they are described in the French and Dutch maps. The distance of the Westerman islands to the western point of Heckla is well laid down on the chart of M. Bellin. The currents run to the W. N. W. from cape Heckla to the isle of Birds ; but in the midst of these islands they run N. W. with dreadful eddies. At new and full moon it is high water at eleven o'clock. Between the Westerman islands and the point of Iceland contiguous to the isle of Birds, there is anchorage under shelter from the N. wind ; but if the wind should happen to change, it is necessary to weigh anchor immediately and put out to sea. All this coast is very healthy, and there is a very fine passage through the middle of the isles of Birds.

About twenty leagues to the S. of the western point of Iceland there is a heap of rocks, which form a low and dangerous island ; it was not described in our charts, but is known to the Dutch : it has often been seen. An inhabitant of Iceland, a man of great sense and learning, who has frequently been to Copenhagen, and who has even wrote an abridged account of the natural history of Iceland, has often spoke to me of this dangerous island, only described in Dutch charts. Having sent him a large French chart of Iceland, on which I had marked with pencil the situation of this heap of rocks according to the Dutch ; he wrote to thank me in Latin, which was the language through the medium of which I was enabled to enjoy his learned and instructive conversation ; and speaking of this island this was his remark : "*Lætus video te ipsum notavisse scopulos quos ipse semel vidi transeundo.*" I see with pleasure that you have noticed the rocks, which I saw also in sailing by.

On the twelfth, at six in the evening, the winds began to blow pretty strongly from the N. E. I steered N. W. quarter W., with no canvass out, in order that I might not pass by the isles of Birds before day-light. The wind drove us nine knots, that is to say, three leagues an hour, without a fail up. At two in the morning, lying N. and S. of the most western of the islands, according to reckoning, I was desirous of carrying sail to haul the wind ; but as it was too violent, I was obliged to be content with the main and mizen-sail part reefed.

The thirteenth, by observation at noon, I was in lat.  $63^{\circ} 15'$ , and by reckoning in long.  $26^{\circ} 15'$  W. of Paris.

In the night between the thirteenth and fourteenth the wind became furious ; I lowered the mizen-yard to reef in the sail, and at one in the morning the force of the wind was so great that the waves could not rise, and the sea was covered with foam. A matter which astonished me was to see in the height of the gale thousands of birds covering the surface of the main, unappalled by the approach and motion of the vessel : the force of the wind had driven them I imagined from the islands of Birds. This continual violent weather began to try my frigate, which was an old one ; she leaked, and we were obliged every two hours to keep at the pump. The apprehension of being obliged to make a port without being able to complete my mission began to give me

uneasiness; but on the fifth the gale abated, the thermometer, which the day before was four degrees below the freezing point, was now three degrees higher, from which I drew an auspicious foreboding of finer weather: in effect, the wind changed to the S. E., blowing a little fresh, by eight in the evening, when I reckoned myself S. of the largest of the isles of Birds, at eleven leagues distant. I steered towards the north to fall in with it; but I saw no island, doubtless from the currents to the west being stronger than what I had esteemed them. When N. of the islands of Birds, which I conjectured myself to be from the run I had made, as well as from there being a calmer sea, the consequence of being between lands, I steered N. E. to fall in with the coast, and to make it the sooner.

The sixteenth, at eight o'clock in the morning, distant fifteen leagues, I descried mount Jeugel, bearing N. E. This mountain, or rather cape, which advances far to sea, rises very high above the horizon; I think it may be discerned in fair weather twenty leagues at sea. It must be remarked, that as the high lands of Iceland are almost wholly and continually covered with snow, and resemble each other in colour, in order to distinguish one from the other, respect must be had to their height and shape. Having taken the latitude under this cape, I found by its bearings that it is rightly laid down in the charts; but its northern point is not sufficiently far stretched out upon them to the N. N. E. The currents here run N.; the variation  $31^{\circ}$ . Between the islands of Birds and cape Jeugel, there is a large bay, called the Bay of Hannefiord; it is little known to the fishermen, and my examination of it was restricted to finding that several fine rivers empty themselves into it, and that to the S. of this bay there is an island under which there is good anchorage, sheltered from all winds, in four fathoms water.

Continuing my course to the N. E., at two o'clock, I made the point of Brederwick, or Brederfiord. The gulph of Brederwick, which is between the point bearing that name and mount Jeugel, is very spacious and very deep. It is twelve leagues wide at the mouth, and receives many large rivers: there are in it many islands, behind which I am persuaded there must be excellent anchorage, but they are not known. The fishermen even have not frequented this before the three last years: there is notwithstanding a quantity of cod caught here. When the winds are northerly, there is a good mooring at the northern part of the bay, in from fifteen to twenty fathoms water, with a sandy bottom: ships frequently anchor here, but it is safe only during the prevalence of northerly winds.

The seventeenth, in the morning, the wind easterly, I stood in towards point Brederwick, which much not be approached nearer than to two cables length, on account of a sand or shelve which stretches out to sea from that point. When I had doubled it, I distinguished, notwithstanding the fog, more than fourcore fishing vessels. I steered for the middle of them, consisting half of French, half of Dutch, and hoisted a white and blue flag at the fore-top (the signal agreed upon) to make myself known. I spoke several French fishermen, in order to learn news of the fleet, and what the success of the fishery. I spoke a Denmark, from whom I learnt that he had already taken ten lasts, a considerable quantity for a month's fishing, for a last is fourteen tons. He added, that he had taken six lasts in the Westerman islands, where he only stopped a week.

There is  $32^{\circ}$  variation at the point of Brederwick: we observed it many times, as well by corresponding elevations, and by meridional observations; for every body knows that when the polar elevation is great, the eastern and western observations are not to be depended on.

The eighteenth, nineteenth, and twentieth, the winds continually varied; they were sometimes N. E., then S. W., at times light, at others violent. In these latitudes there is

is always a great instability in the winds; they however mostly blow N. E. and S. E. These three days were employed in reconnoitering the coast, and in taking bearings, and making remarks on the direction of the shores.

The twenty-first the wind was W., and not perceiving more than two or three vessels, I bore N. N. W. to seek the fleet. At ten o'clock in the morning, six or seven leagues from the land, I perceived the sea white before me to the horizon. The two pilots for those coasts which I had on board assured me that this whiteness was nothing but the sea itself which was frozen. I continued my course N. N. W. to take a nearer view, and getting within half a league of it I satisfied myself, the sea appearing wholly frozen in one solid mass, extending from the N. W. of the compass as far as to the North Cape, which was at E. S. E. I tacked immediately to avoid the danger, and warn the fleet of it. The year before the strait between Greenland and Iceland had been entirely frozen over all the summer. I cannot here refrain from making some reflections on this frozen sea, and on the mountains of ice which are found on the north sea during voyages from Europe to North America, and sometimes on doubling cape Horn. Some have been met with which, like islands or rather continents, appear to be many leagues in length, and elevated more than two hundred feet above the surface of the water. How are we to account for those enormous masses? Every body knows that the total cessation of motion in insensible particles causes cold, and that cold is the immediate and true cause of the formation of ice; that there are other subordinate and accidental causes, such as spirits of salt and nitre, which, expanded in the air, occasion even in the midst of summer such extreme cold as to freeze lakes and rivers. Thus the north wind in the northern hemisphere, and the south wind in the southern hemisphere, contribute to cold and the forming of ice, because they bring from the poles corpuscles or cold particles, which penetrating the surfaces of bodies suspend the motion of the imperceptible particles. I shall enter into some detail to develop the different causes of cold and ice.

I compute, in the first place, on the existence, as a base, of an æthereal matter, extremely subtle and active, which surrounds and penetrates in a larger or smaller degree all liquid substances; if its motion be lessened, its spring become weak, so that it be no longer able to overcome the resistance of the integral parts of the liquid (that is, which causes the cold), ice will be produced; thus the formation of ice is the immediate result of the diminished motion of the subtle matter which constitutes fire and heat.

Let us now examine the accidental causes. Salt, nitre, saltpetre, these make up the first accidental cause of the formation of ice. In places where they abound the air becomes loaded with them, they penetrate the pores of liquids like so many small wedges, they close the passages against the entrance of the gross particles of the subtle matter, stop the motion of the imperceptible particles of liquids, and thus harden and convert them into ice. It is thus that in certain caverns, whose neighbourhood abounds in nitre, pyramids of ice are formed, as in a cave near the village of Chaux, five leagues from Besançon, where three were found in the month of September 1711, of fifteen feet in height\*. Wind I consider to be the second cause of ice.

Many persons imagine the wind to be an obstacle to the formation of ice; it is true, when it has much hold of an extensive surface of water, as of rivers, lakes, and seas, it frequently hinders them from freezing while it continues to agitate them, and deprives the integral parts of the liquid from uniting together, notwithstanding it is certain that for the most part wind ought to accelerate freezing, as I am about to explain. In cold weather, approaching to frost, a dry wind, such as the N. E. in our climate, contributes

\* Histoire de l'Acad. 1712. p. 22.

to freezing; for the air which is at rest on the surface of a liquid, participates by degrees of the coldness thereof, and keeps at that temperature; so that the subtil matter which circulates in the interstices of the liquid, and the motion of which is always in proportion to the motion of that which immediately surrounds it, is not yet sufficiently weakened to admit of freezing taking place; but if the communication of cold to the surface of the liquid be hastened by a violent impulsion of the air, which immediately adjoins its surface, and substituting (which the wind does) a more cold and dense air, such as is requisite for occasioning congelation, the subtil exterior matter imposed on the liquid will be weakened, and by this means, that in the interior as well, which must necessarily lose in its action as much as the external, in order to preserve an equilibrium. Nevertheless, should the fresh airs remain at rest, freezing would not succeed; but if continually cold air in succession should drive away that which preceded it, until that which should be of a temperature to excite freezing should be in contact; it is evident, that ultimately it must communicate its frigidity to the liquid, and paralyze the motion of the internal matter so as to occasion frost; thus wind produces frost, as a fan excites in our frame the sensation of coolness, by expelling from around us the airs warmed by our secretions and breathing.

The third accidental cause of the formation of ice, is the diminution of the exterior heat of the sun, arising from the distance of its source, the oblique and ungain disposition of the surface which receives its rays, and, lastly, the interposition of vapours, and dense and dark atmosphere, such as a fog, which in measure intercepts its rays. It is to be observed as well, that the obliquity of the globe causes the solar rays to be intercepted by a greater column of air.

There are besides many other accidental causes, such as climate, local circumstances, and the suppression of the central aspirations, or vapours, which are continually arising from the bosom of the earth. Many naturalists, and particularly a celebrated academician, M. Dortous de Mairan, have maintained the theory of a central fire.

From this short dissertation, and from examination of circumstances, it is easy to conceive that the sea may freeze in the neighbourhood of the poles, even as far as forty leagues from the shore\*; and that considerable masses of ice may be met with at sea; but how are we to account for the pyramids, the islands, and towering heaps of ice of six or eight leagues in length which are found floating? These mountains of ice, formed at first by the union of different masses, owe their height to snow, and rain, frozen on its reaching them; and I am inclined to imagine, that when become of a certain size, they always increase in bulk. A learned Englishman, who wrote in the middle of the last century, adopted the idea of their being perpetual, especially near the poles, and computed that they rose so high as to cause the figure of the earth to be sensibly lengthened thereby at the extremities of its axis†: it is on this theory that he explains the elliptic appearance of the shadow of the earth on the disk of the moon in two eclipses, the one observed by Kepler, the other by Tycho Brahe; but all these reasonings are unfounded. The sea is not frozen round the poles for a greater distance than fifteen or twenty leagues from land, and the mountains of ice which various navigators have seen, have no more effect in altering the rotundity of the globe, than five or six grains of millet floating on the surface of a globe of four or five feet in diameter.

The twenty-second, the wind was N. W., a very fresh gale, the weather foggy with a heavy sea; and perceiving every appearance of a tempest, I decided on making land to take shelter in the gulph of Patuxford. At eleven in the morning, during a moment's

\* Memoires de Trévoux.

† Mr. Childrey's History of the Singularities of Scotland.

clearness, I saw several vessels which were making for different ports to shield themselves from the threatened storm. For my part, I preferred the gulph of Patrixfiord, because one of the directors of the Danish company resided there, and the whole of the coast offered so secure a road that, using an expression of Virgil, we may justly denominate it, "*Sedes tutissima navi.*" I entered the gulph, sounding all the way, I found continually from thirty to thirty-five fathoms water with a muddy bottom, and when I had doubled the warehouses of the company, which I left to leeward a quarter of a league distant, I anchored in twenty-two fathoms, with a muddy bottom. I stopped with the anchor a-peak for sometime, while we sounded all round the frigate, and, when I found no danger to be apprehended, I let out eighty fathom of cable, and moored S. E. and N. W. I then bore N. N. E. upon the warehouses of the director, the pyramids of stone which are the point of the gravel lying N. five degrees E., and the first point out of the gulph bearing N. W. a quarter N., five degrees N. I could have anchored nearer the shore more deep in the inlet, but it would not have been so advantageous a position to sail from. The proper time to anchor is on bearing N. and S. of the point of gravel.

As soon as my frigate was moored, I went to the director of the Danish company, whom I informed that the bad weather had forced me to anchor there; that the king of France had sent me to preserve a proper discipline and good order among the fishermen, and to hinder their trading with the inhabitants of Iceland, or doing any thing which might be considered as infringing the privileges of the company. The director received me with a cool civility, and did not appear to give much credit to what I said. It had been told him, that there were three French frigates in that latitude, for the purpose of protecting a smuggling trade with the inhabitants, and that we certainly had bad designs; but very soon he was dissuaded from such an opinion, and convinced of the contrary. The order which I preserved quickly destroyed the wrong impressions which had been stamped on his mind respecting us. I always kept a guard in my row-boats, never suffered any but the officers to go on shore, and, for any thing I wanted, addressed myself to the director.

The day after my arriving in the bay, the wind being still N. W., the sky clear, and the weather sufficiently mild, I sounded the roadsted, and took bearings. For several days I continued the same employment. I determined the position of the principal points by means of a rule with copper mountings, furnished with a telescope, and contrived to form a plan of the bay, on which reliance may be placed, as well for luffing as for anchoring, although not laid down with the nicest precision.

The twenty-ninth, at noon, a violent gale of wind arose from the N. E. which lasted forty-eight hours. As I was moored at the foot of a high mountain which covered the station, the sea did not run very high; but the swiftness of the clouds, and the whistling of the wind in the rigging shewed the force of the gale. The cold was intolerable; Reaumur's thermometer was on the thirtieth at 4° below 0. The storm drove to the entrance of the bay several large fragments of ice, detached in all probability from the frozen ocean, which I had had sight of. The sight of these islets of ice surprized me less than the information which I received of the road of Patrixfiord having been, as it were covered with ice on the fourteenth of May. This is however what the director told me, as well as several of my officers. The storm occasioned thirty-six fishing vessels, French and Dutch, to go into port; several of which had received damage, which I caused to be repaired with diligence; so that in three days such as had been injured were in condition to return to sea.



*Containing a Description of Iceland.*

DURING my stay in Iceland, I neglected nothing in making myself acquainted with what was remarkable in this island, such as the mode of living of its inhabitants, their manners, their religion, and government. I paid attention to all these, and the frequent conversations which I had with Mr. Olave, who had dwelt a long time at Patrifjord, and who was very learned, gave me information on every subject which can be gratifying to the reader relative to this country. Some writers have spoken of this island but merely from the report of a few fishermen, or sailors, very ill informed, and very incapable of giving due regard to things. Mr. Anderson, burgomaster of Hambourg, who published the natural history of the country in German, obtained all that he collected relative to Iceland from the oral testimony of fishermen. Mr. Horrebows also has given the world an historical and physical description of the island, in the German tongue, with critical observations on the history of Mr. Anderson. These two authors frequently contradict each other. We have as well a description of Iceland by Pieriere, author of the system of Pædamites. These are the three writers who have furnished us with any knowledge of Iceland; but as all their histories are replete with errors, I conceive that the reader will not object to a more exact and faithful account here offered him. I shall follow the steps of Mr. Horrebows, who was born a Dane, and is best informed.

The island of Iceland is situated in the north sea, between  $63^{\circ}$  and  $67^{\circ}$  N. Latitude, and between  $15^{\circ}$  and  $30^{\circ}$  W. of Paris. The etymology of the word is derived from Ice and land. The frost, which is so severe, and in the mountains, which are constantly covered with snow and ice, gave origin to the word.

Iceland is one hundred and thirty leagues long, of twenty-five to a degree, and seventy leagues wide; it is only seventy-eight sea-leagues distant from Ferro, and thirty-five from Greenland; which, on the coast opposite to Iceland, is inaccessible, from the ice and rocks which surround it.

History does not positively fix the period of the discovery of Iceland; some writers have taken it to be the Thule of the ancients mentioned by Virgil, lib. I. Georg. I rather imagine this Thule to be Ireland, one hundred and sixty-four leagues from Iceland. Angrinus Jonas, author of the Icelandic Chronicles, refutes the opinion of writers, especially Pontanus, who contended for Iceland being the ancient Thule, in his *Specimen Islandicum*.

This island was discovered in 798 by Nadocus, who called it Sneeland, on account of the great quantity of snow with which it was covered. In 872 a Swede, named Gardanus, observed it more particularly. The following year a Norwegian pirate, called Flocco, gave it the name of Iceland; and in the year 874 Ingulf, or Ingultus, a Norwegian nobleman, took refuge here, in consequence of having killed two barons of his country. He found it uncultivated, and very thinly inhabited; he is said to have been its first king.

Every thing I have said shews that Iceland was very little known, and the first ideas we have had of the country originated in Mr. Anderson and Mr. Horrebows.

The maps of this island have been hitherto very defective. Europe had no other map of it than that of Andrew Velleius, a Dane, engraved in 1585, copied by the Dutch in 1698, and by Mr. Bellin in 1751, for his reduced chart of the North Sea. This skilful hydrographer, whose useful labours have furnished us with so fine a collection of plans and charts of every kind, presented me with a map of this island on a

large scale, reduced from a greater drawn by Danish surveyors from actual observation, and finished in 1734; I found it however very bad and highly dangerous. In my two voyages I neglected nothing in correcting it; and I flatter myself that all navigators will be perfectly satisfied with that which Mr. Bellin is about to publish from my remarks and observations.

Iceland is as it were nothing but a heap of mountains and rugged rocks, which cut each other in parallel lines nearly in the direction of the cardinal points; but between these rocks and mountains are fine vallies furnishing good pasture for flocks. These mountains are almost all barren, and continually covered with ice and snow. Many of the mountains are volcanic, but the most famous in the island, and even in the whole world, is that called Heckla: in 1766 it vomited forth such a prodigious quantity of stones that the sea was covered with them for twenty leagues from the shore in the southern part. It is nowise surprising that these stones should float, penetrated as they are by so violent a fire that it consumes all their solid parts. The mountains which are continually covered with snow are called Joekul, or Jeckelen; they yield in the summer large torrents, whose troubled and dirty waters exhale a most fetid smell. In the neighbourhood of these Joekelen there are some mountains more lofty, but on which ice is not perpetually found, doubtless on account of saltpetre in them, which causes it to thaw. A singular circumstance is noticeable in the Joekelen, they increase, diminish, become higher and lower daily; every passing moment adds to or takes from their shape; so that if desirous of following the steps of any one who the day before should have travelled among them, the traces are suddenly lost at the bottom of an enormous accumulation of ice, which it is impossible to traverse; and if it be passed by a circuitous route to the right or left, the steps of the traveller are distinguishable again at the same elevation, and in the same line as the former track, which is a proof of the non-existence of the mass of ice upon the previous day; it must be confessed this phenomenon is singular.

That travelling is difficult in this country, from this is easily deducible, there is no road for carts or carriages; the mode of travelling and transporting of effects is by horses; but in many places there is no means of advancing except on foot, when the merchants are obliged to carry every thing on their backs: add to which, the traveller is not secure of being able to pass one year by the same route he did the preceding; for thaws sometimes separate rocks in twain, which presents an invincible obstacle, and torrents rushing from the mountains, precipitate into the roads heaps of stones, which cover and render them impassable.

Iceland at this time contains more than seventy thousand souls: before that terrible pestilence, known by the name of the *black plague*, which ravaged the whole of the north, in the middle of the fourteenth century, it was much more populous. The Icelandic annals make no mention of this calamity, it is only known by oral tradition, that the infection existed in the valleys, covered with a heavy dew, and that as a preservative from death, it was requisite to fly to the highest rocks.

The maritime part is better peopled than the interior, on account of the prodigious quantity of fish which resort to the coasts, and the facility of trading with the vessels of the company established in different ports. It would be much more populous were it not for the frequent earthquakes which have oftentimes destroyed numbers of the inhabitants, and whatever M. Horrebow, who ridicules M. Anderfon for his remarks on the destructive igneous eruptions and earthquakes may say, the recital of M. Horrebow himself will shew whether or no these fires are matters to be lightly esteemed. This is his own relation of them. "In 1726 some shocks of an earthquake were per-

ceived in the northern districts; after these a considerable mountain, called Krafle, began with a dreadful noise to vomit forth smoke, fire, ashes, and stones. Horrible fight for those who dwell in the neighbourhood, and particularly for two travellers who happened to be passing below the mountain! To them however, from there being no wind, not any accident occurred, the ignited stones cast up by the mountain falling back perpendicularly. It continued burning for two or three years; and, in 1728, the fire communicated to some mountains of sulphur situated near the volcano; they burnt for some time until the mineral matter had melted, and formed a river of fire which run from the mountain towards the south. The inhabitants established on the borders of a great lake, called *My-Varne*, three leagues distant from the mountain, were apprehensive of this burning river, which continued advancing towards their abode. They took away the wood of their houses to remove to some other spot; at length it continued its course, and proceeded to the farms and the lake before mentioned. There it overturned, burnt, and consumed a farm, called Reikchild, its meadows, and two other farms, named Groff and Fragenes, situated on the lower shore of the lake. It at length discharged itself into the lake *My-Varne* with a frightful noise, causing an ebullition, a frothy whirlpool in the highest degree horrible." From this description of Mr. Horrebow, who certainly did not exaggerate, for he was very much inclined, being a Dane, to lessen the physical vices of an island belonging to Denmark, some judgment may be formed of the volcanic eruptions, and earthquakes, to which Iceland is liable: it is certainly true, that it is subject to all sorts of catastrophes. Mountains are seen to sink in an instant, and lakes form; Joekelen, or ice mountains, to melt, and throw out fire, uniting the double horror of flood and conflagration.

Springs of hot water are found in several districts of Iceland. Messrs. Horrebow and Anderlon agree upon the singular effects of many of these springs, but the most curious of all these fountains is that situated near a farm called Raycum, in the district of Huzevig. There are three hot springs distant from each other about thirty toises; the water boils in each alternately. They rise from a flat surface; two of them throw up water from the midst of stones to the height of eighteen inches: the third has a round opening of the size of a brewer's vat, and throws up water ten feet high. What is surprising, these springs only play alternately, and after having boiled three times, which serves as a notice to those who are nigh to retire. It is remarkable, that when a stone of whatever dimensions is cast into them, the force of the ebullition is so great as to throw it back. M. Olave informed me, that the inhabitants of the neighbourhood of these hot springs use them for cooking their meat and fish, and that travellers heat water in them for making tea.

Marble is found in some parts of the island, and crystal frequently in the rocks. The crystal of Iceland possesses the faculty of doubling the objects which are seen through it. Mr. Horrebow conceives it to be rather a lapis specularis than a crystal. He is mistaken, as well as others, who have imagined it, from its leafy tissue, to be a sort of talc. Some have reckoned it in the number of selenites; but it is demonstrated to be a calcareous spar, which care must be taken in ranking with other substances resembling it. The excellent work of Huygens on light may be consulted upon this subject with the Memoirs of the Academy of Sciences, for the year 1710, p. 341.

Iceland contains in its bowels mines of copper and iron; and I myself have often found pure masses of these metals in the mountains. M. Horrebow certifies, that large lumps of silver are frequently found almost at the surface of the earth; this I never saw, nor ever heard of any body's finding.



Brimstone is met with both in the plains and mountains. It is discovered by the vapours rising from the earth, and in the vicinity of hot springs. It is always covered with a stratum of slime, or sand. It is of different colours, white, yellow, green, red, and blue. It is not necessary to dig lower than three or four feet to find exceeding good sulphur. Those places are preferred where there are small eminences at the summit of which is a focus by which a hot vapour exhales. At a short distance from the eminence sulphur is met with in small detached lumps, but it is under the eminence itself that it is found the most compact and in the greatest quantity. The workmen who dig the sulphur mines, take especial care to envelop their shoes with coarse woollen rags, in order to preserve their feet from the heat; in fact the brimstone, when fresh brought from the mine, is so hot, that it is impossible to keep it in the hand.

M. Horrebow criticises M. Anderson upon his saying that no wood is found on the island; he then gives an account of two or three forests which he affirms are more than half a league in circumference. For my part I never saw any wood, and have been told that there is none other than brambles and small bushes, such as thorns and juniper: but nature, always beneficent, makes up this deficiency by the prodigious quantity of wood which the sea throws on shore in several parts of the island. On the coasts where this advantage is wanting the inhabitants make their fires of turf, and the refuse of fish, dipped in oil made from cods' liver. In many places old roots are dragged from the ground, which proves that the island was formerly covered with wood.

M. Olave shewed me pieces of a singular kind of wood found in sand, and at times in the midst of stones. This wood, to which he gave the Latin name of *lignum fossilis*, is black, heavy, and resembles ebony. The Icelanders call it *schwartzten brand*, black brand. It is found both in broad and narrow pieces, and always among rocks surrounding it. This wood, if it be wood, deserves the particular attention of naturalists. I give here the substance of what M. Olave says of it in one of his letters. "Some persons rank fossil wood among the class of petrifications, but improperly, perhaps owing to their not having seen it itself. The nature of it, in which it bears resemblance to wood, of splitting, being cut, and receiving a fine polish, sufficiently proves the contrary. Nevertheless this fossil genus is not wood, nor vegetable, since it does not possess proper vessels for the reception of alimentary juices, nor either throws out roots below, or spreads its branches above the earth. It is called black brand by the Icelanders. It thrusts itself from the fissures of dirty rocks, either abounding in bark, or for the most part earthy; on the inside it is curious for its very fine grain, which runs in the course of its length; in its most internal part, where most perfect, it is wavy, and does not yield to ebony. Hence it is turned by the inhabitants of the towns into staves for caskets, tables, &c. Heavier than any other wood it sinks in water, is not liable to rot, nor easy to be consumed by fire, burning like earth. In its substance it bears resemblance to wood, in its origin to minerals; whence can it be that in Iceland, where it was first produced it should be so long unknown, and its nature for so long a time be unexplored? How comes it that a matter so curious has not been thought worthy the trouble of more diligent enquiry?" The reader may not be displeased with my producing this fragment of a letter which may serve to make him acquainted with the nature of this fossil wood.

A botanist would find much to observe in Iceland. I shall not detail the numerous salutary plants which the earth produces in large quantities, many of them unknown in France; these matters are not in my way, but I could not refrain noticing, while I admired the wise bounty of Providence, that those simples the most necessary to the inhabitants were the most common, such as garlick, sorrel and cochlearia; excellent preservatives against the scurvy, which is the most prevalent malady of the country. An-

gelica as well is met with every where, it grows so plenteously that the inhabitants often live upon it themselves, and give it to their cattle; it is moreover of a most exquisite flavor, and extraordinary size.

But the most singular and valuable plant is that which is found upon the rocks, it is a species of moss which very much resembles lungwort, or ladies' wild-wort. Many Icelanders make flour of it which they prefer to wheat: it is called by them *fialla-gras*, or rock-grass. M. Olave sending me at the same time a handful of it, thus speaks in praise of the plant in one of his letters. "I send to you Sir, a herb which resembling lungwort serves among the Icelanders as a succedaneum for bread, it is called Iceland moss, and grows on the rocks of the loftier mountains, so that with truth we may say, God gives us bread from stones. It never grows in earth or soil of any description, nor casts forth roots. It affords us a noble feast; the powder of it, taken most frequently in milk, is so pleasant and salubrious, that I prefer it to every kind of flour; it is besides an excellent stomachic, and a most safe medicine in dysentery." The reader will perceive that M. Olave, who is well versed in botany, attributes highly salutary qualities to this plant.

Pulse and fruit do not grow in Iceland, owing to the excessive cold, according to M. Anderfon; and notwithstanding what M. Horrebow may say, who affirms that he ate currants from the garden of the governor of Befsted, I believe it to be as difficult to raise turnips in Iceland, as pine apples at Paris. It is at this time impossible to grow corn there; and the regulations respecting agriculture, which are used as an authority for the supposition of its having been formerly cultivated, do not prove the fact; for the wisdom of legislators, every day provides for occurrences that never happen.

There are no wild beasts in Iceland. Sometimes bears are brought over on sheets of ice from Greenland; but as soon as they land and are perceived, they are shot, or killed with javelins: they come over of different colours, black, white, silvered, and striped, but never have time to multiply.

The only undomesticated animals in Iceland are foxes. They are black, blue, red, and white. In order to collect a number of these animals the inhabitants place in the fields a dead sheep or horse, whose carcase exhaling a strong smell to a great distance, draws together the foxes around it; somewhere in the neighbourhood the sportsman fixes himself, having beforehand built a place from which he can see, without being seen, and whence he is enabled to kill four or five foxes at a shot.

There is a plenty of horses in Iceland, of a small race, coming, according to M. Anderfon, from Norway; according to M. Horrebow from Scotland; probably neither is in the right. However that may be, they are strong and swift. In the mountains are thousands of them, which for several years never enter a stable; they possess the instinct of breaking the ice in order to get their food. The saddle horses are kept in the stable all the winter; but when an inhabitant wants any for labour, he sends his servants into the mountains who gather them together, and take them with halters. The horses taken in the mountains at five years old generally become the handsomest and most vigorous of any.

The Icelanders raise numerous flocks of sheep. Every farm has its flock, and some farmers have as many as five sheep walks. In some districts they are left to wander all the year about, and even during the winter, in the mountains. The only precaution used is to separate and take into folds the yearlings, who not being so well fleeced as the older sheep, would not be able to support the cold. These animals are obliged to make a hole in the snow in order to get to their pasture: it is a very precarious possession to the inhabitants, who oftentimes lose the fruit of all their cares in an instant.

When it snows and the wind is violent whole flocks, obliged to yield to its violence, are driven to the sea shore, whence a successional tempest carries them off to sea. Mr. Horrebow reports his having seen some which the force of the wind had taken four leagues out to sea. It often happens when the sheep are in the fields in winter time while it snows and freezes, they huddle themselves together, their fleece then becomes frozen in such manner that they cannot separate, having above them more than twenty feet depth of snow. In this situation they remain until the weather allows of their being fought for and released. At times they are safely relieved, at others they are smothered by the weight of snow, or strangled by the foxes, which are always persecuting them. A singularity which appears fabulous is related by M. Anderfon. He says that when the sheep are obliged to remain some days in the snow, hunger causes them to feed on their wool, and that they subside themselves in this manner until they meet with succour. This I have myself been assured in the country is a fact; I was even further informed that when the farmers discover any possessed of this mania, he kills them, as it is injurious to the fleece of the others, which is their only protection from the cold. The wool of the sheep is very fine, but varies in quality according to the quarter of the island, which is of great extent.

Iceland has plenty of bulls and cows of small size. The bulls have a game flavour, the cows give a quantity of milk\*, some ten gallons a day of an excellent quality, it is both meat and drink for the sick; skimmed, it forms the principal beverage of those who are well, it is called then *fyre*. It becomes sour as it gets old; it is then esteemed good and wholesome: when too fresh they even mix the juice of sorrel with it.

The game of Iceland consists of woodcocks, snipes, and partridges. The partridge called by the natives *riper* is white, it is larger than ours, and has its feet covered with a down similar to that of the rabbit: partridges in Lapland are white plumed as well, and as large as those of Iceland. The Icelanders shoot them, or take them in nets.

Iceland is full of an infinite number of birds of every kind, such as eagles, vultures, hawks, falcons, owls, crows, and many others, both with distinguishing names, and without them. Of all of them the falcon is best worthy attention. It is met with, white, a light grey, and grey. It is well known that the falcons of Iceland are the best, they are larger and stronger than those of other countries, and hawk for more than a dozen years. The King of Denmark sends for some every year. He gives two guineas of our money for a grey falcon, and seventy shillings for a white one.

There is plenty of aquatic fowls, such as swans, geese, ducks, plovers, &c., but the most remarkable, and the most gainful to the inhabitants is the duck which yields the eiderdown. This duck brings two-fold profit to the inhabitants; it lays excellent eggs, which it may be made to renew three times, and it gives a precious down.

This bird forms the inside of its nest of the down which it tears from its breast, afterwards it lays three or four eggs; the inhabitant to whom the nest belongs takes away the down, and the eggs; the female strips herself again, and lays other eggs, which a second time are taken away: the male then strips its breast of down, and the female lays eggs for the third time; but these are left her, since if taken away the third time she would lay no more and would leave the district, which would be an unfortunate event, and a considerable loss; as the young ones the succeeding year return to multiply on the place which gave them birth. M. Anderfon relates that he had been told that the Icelanders put a stick half a yard long into the nest of these ducks, in order to make the female lay as many eggs as would cover the height of the stick in order to hatch them.

\* For want of hay the inhabitants feed their cattle on the refuse of fish boiled.

I am surprized that M. Anderfon could repeat fuch idle tales, for my part all that I relate is credible. During our ftay in Iceland we killed a number of thefe birds both male and female, and I remarked that the down taken from the male, which has many white feathers, is much more fine and delicate than that of the female.

The quantity of fifh of every fort with which Iceland abounds is aftonifhing: they are fifhed for all the year about; but the moft fuitable feafon is from March to September. The fifhery produces herrings, cod, haddock, hollebut, foles, plaice, maids, mackarel, ray fifh, &c. All thefe fifh are well known, but we caught of them fome unfually large; a maid one day, for example, which weighed three hundred pounds. The moft fingular fifh of this ifland is that we call the wolf-fifh, which the Icelanders name *steen bit* (stone-eater); when opened it is always found full of little ftones or gravel: it feeds alfo upon fmall cod, which it is continually purfuing. As often as the weather will allow, the Icelanders go fifhing in the bays, or even as far as a league or two to fea; they embark for the purpofe in fmall boats, which are called by them *yavels*. The moft common and moft advantageous fifh for the inhabitants is the cod, which they know by the name of *forfch*; it is their principal article of barter; they maintain themfelves by exchanging it againft whatever they have occafion for. It is this fifh that the French and Dutch go to fifh for in the months from March to September. The veffels they ufe are called doggers, and are of about an hundred tons burthen. The fifhery begins at the head-land of Bederwick, and ends at the point of Langenefs, going round by the North cape and the ifland of Grims. The people fifh with the hook, which is furnifhed with a bit of raw meat, or the heart of a fifh newly taken. The French and Dutch doggers ufually fifh at the diftance of five or fix leagues from fhore, in forty to fifty fathoms water. Many veffels even go fifteen leagues to fea, and fifh in one hundred fathoms water. When the cod is taken the head is cut off; it is well wafhed and cured, and afterwards put in casks with rock or Lifbon falt. Thus is this fifhery carried on, which employs annually about eighty French and two hundred Dutch fhips. Cod fifh thus prepared is white and delicate, rock falt contributing to preferve its whitenefs, not precipitating a dirty fedi-ment, like French falt. It is furprifing, on noticing the great quantity of cod that is annually taken on the great bank, in the north, &c. that the fea fhould not be exhausted; but a naturalift, who had the patience to enumerate the eggs of a cod, and who found in one only 9,344,000 eggs, has fufficiently fatisfied us that its increafe muft exceed its deftruction. After the cod, the moft common fifh is the herring, along the coafts, and throughout the north fea, the fifhery of which is infinitely productive to the hyperborean nations. This fifh is fo numerous, that it is calculated that the whole taken by the fifhermen of the north, bears proportion to the number which populate the fea as one to a million only. This fifhery fupports more than one hundred thoufand people in Holland. M. Huet values the annual produce of the Dutch fifhery at twenty-five millions, of which feventeen millions are gain, and the expences eight. Doot affirms that in 1688 the number of four hundred and fifty thoufand Dutchmen were employed in the herring-fifhery and its concerns.

A great number of whales are met with, particularly in the fummer, on the coaft of Iceland. I have feen twelve or fifteen together, five or fix leagues from fhore, north of Bird's ifland; I fired about twenty cannon-shot at them to exercife my gunners, and wounded feveral. In Iceland they catch a quantity of falmon; and in the lakes, fuch as the myvarne, of which I have before fpoken, numbers of excellent trout are met with, which the inhabitants dry and falt. Eels as well are very common; but the Icelanders have a particular antipathy to them.

After





Engraved by George Cooke.

*Lady of Scotland.*



After describing the productions of the island, it is fit I should notice the constitution, labours, and private life of the Icelanders. These people are of a common size, and robust nature, enjoying their health admirably; a manly education, a sober, frugal, and laborious life, no doubt contribute to give them this temperament. They are mostly nimble and well made, have fine teeth, and generally light hair. The women are not of so strong constitution as the men; their occupations are very light, they work and prepare the wool, and their most laborious employment is hay-making. Their labours are not so easy nor so fortunate as M. Anderson describes; they do not proceed to bathe, and resume their different work immediately after laying-in. In the different places I resided at in the country my surgeon delivered several, and always with the same difficulty, and I know that they always kept their bed for a week. I have even been informed that for want of midwives, surgeons, and necessary assistance, many women are lost. The Icelanders have no good surgeons, nor skilful physicians; nevertheless after fifty years of age they are much in need of them; it is then that they begin to be attacked by disorders and infirmities. A man of eighty years of age is seldom seen on the island. They die chiefly from complaints in the breast, the scurvy, and obstructions. They call almost all the disorders which are fatal by the common title of *landfarjak*. They have an hereditary complaint differing little from the leprosy, but not contagious. It will perhaps appear surprising that the Icelanders, whom I have described so vigorous, should become infirm so soon; but respect must be had to their rude occupations, and the sedentary life they lead. They have no public exercise, no games, no dancing, and both by night and day in fishing are subject to the inclemency of the weather; or if they inhabit the interior, they never leave their home without getting wet at feet, from the number of rivulets and torrents which fall from the mountains covered with ice and snow. The Icelanders bring up their children with great tenderness, and do not wean them earlier than in France. M. Anderson is deceived in imagining that they do not suckle more than eight or ten days; but (without offence to M. Horrebows) he is correct in stating that when a child is carried to be baptised, a bit of linen dipped in milk is put into its mouth: I have seen and can certify the truth of this. Their mode of bringing up their children surprised me; they put them in breeches at the end of two months.

I have observed that the life of an Icelander was sober and frugal: the reader may form an estimate of it from their meals; they live during the summer principally on cod's heads, and in the winter on sheep's heads: they cut off the heads of the cod to dry or salt the fish, and they are mostly consumed at home. A common family make a meal of three or four cods' heads boiled in sea-water: they boil every thing. The sheep's heads which they consume in the winter are the remnants of the mutton they salt for trading with. They put them in a kind of vinegar for keeping. The vinegar is made from skimmed milk, the juice of sorrel, and other strong herbs. All their dishes are cooked without either salt or spice; butter is the only fauce: milk however is their principal food. Bread is very uncommon in Iceland; the poor are unacquainted with it, living on dried fish alone: those in easy circumstances eat bread on high days, such as wedding and baptismal days, and where particular company visit, &c. This bread is brought from Copenhagen: it consists of broad thin cakes, or sea-biscuits, made of rye flour, and extremely black.

The dress of the Icelanders, particularly the women, is singular: I do not speak of the officers of the law who come from Denmark, and who dress after the manner of their country, but only of the inhabitants of Iceland. The men dress in much the same manner as seamen; they have a jacket shaped like a coat, and a good cloth waistcoat, with breeches of the same. They have four and even six rows of buttons to their waist-

coat, and as they are always of metal, either copper or silver, they serve for ornament. The fishermen wear above it a coarse smooth waistcoat, and a large skin jacket of leather or sheep's skin; they rub this over with the oil of fish's liver or grease to keep out the rain, and preserve it. The rest of the body they cover with a sort of pantaloons of leather, which supplies the place of breeches, stockings, and shoes. They have large flapped hats, which keep them from the inclemency of the weather when they go a fishing. The women wear gowns, jackets, and aprons made of a cloth manufactured in Iceland, called *wadmel*: over their jacket they wear a very wide robe, pretty much resembling that worn by the Jesuits, but it does not reach down so low as the petticoats, which are exposed. This robe is of a different colour, mostly black, and is named *hempe*; it is trimmed with a velvet binding, or some other ornament. The rich wear down the front of their hempe several ornaments of silver. They trim the bottom of their aprons and petticoats as well, and the seams of their jackets with silk ribbon, galloon, or velvet, of a different colour. They wear a stiff collar three or four fingers wide. This collar, or necklace, is always of a very fine stuff, or velvet embroidered with gold or silver. Their head-dress resembles a cone, or a sugar-loaf, of two or three feet high; it consists of a kerchief of very coarse cloth, which stands erect, and is covered over by another finer kerchief, forming the figure I have mentioned. Both men and women wear shoes of ox's or sheep's skin tanned, and sewed together by the women. Their shoes have no heels, but are fastened to the instep by small straps.

Messrs. Horrebow and Anderson do not agree about the dwellings of the Icelanders. The first, who sees every thing in a brilliant point of view, describes the houses of the rich; the latter, who only wrote from the relation of fishermen frequenting the coasts, pictures the cabins of the poor. The descriptions of the former are too magnificent; the account of the other is not very wide of truth. Entering a house, says M. Horrebow, you meet with a deep passage, six feet wide, at the top of which are cross rafters roofed over. In the passage, from space to space, are round openings to admit the light; they are closed with small panes of glass, or more commonly by small cask hoops, over which is stretched a parchment made from the bladders of bulls and cows: this parchment is called *binne*; it is very transparent. At the end of this passage is the common entrance to the house. In the front of it is a room fourteen ells long by eight broad, which the Icelanders call the stove; this apartment is generally the working room: the women dress the wool, make cloaths, and do other household work in it. At the end of this there is mostly a bed-room for the master and mistresses of the house: above, the women servants sleep, and the children. There is usually besides two other apartments on each side the passage; one a kitchen, another a pantry, the third a dairy, and the fourth and last, a bed-room near the entrance of the passage for the men servants: this apartment is with them called *Skaule*. In the roof of every room are openings as in the passage, for the admission of light through frames of *binne*; but the work room is ordinarily lighted through two glass windows: besides these different apartments, the generality have besides, adjoining the *skaule*, a parlour to receive strangers in. Near the dwelling-house they have a small building, called *forge*, where all their works are carried on. Every inhabitant, in addition to these, has his stable, his cow-house, and sheep-pen. The Icelanders do not house their hay, but place it on a high spot, surrounding it with a ditch, stacked in heaps six feet high and six square. They place these stacks at small distances from each other, which they cover with turf in a sloping direction, so as to carry off the rain to the ditch. This is the description Mr. Horrebow gives of the common houses of the Icelanders; afterwards he wainscots the apartments, and ornaments them with glasses and furniture. The richest people of the country, it is true, have



have their houses portioned out in the manner above mentioned, but without panelling, glasses, or gaudy furniture. The rooms, the bed-chambers, or even the parlours appropriated to the reception of strangers, are rarely floored : a table, some chests or wardrobes, and a stove, these complete the furniture of the most easy ; the poor and the fishermen have only a wretched cabin, half under ground, the lower part of which is occupied by cattle, and the upper part separated only by a few straggling planks, serves for the residence of the masters, their children, and servants : for the rest, all the houses are covered with turf. Nevertheless in towns, such as Hoolum and Skallholt, the houses of the bishops and mayors are built of brick, stone, and wood, and are covered with planks ; but they are very expensive, since almost all the materials are brought from Copenhagen. A heap of houses scattered at distance is called a town with them.

The Icelanders are not so vicious as Mr. Anderson relates, nor so virtuous by much as M. Horrebow asserts them : they are good-natured, mild, humane ; but lazy, mistrustful, and drunkards. The factors of the Danish company, who have warehouses on different parts of the coasts, give them brandy in exchange for dry fish, wool, and other merchandize of the country ; and this trade furnishes the inhabitants with the means of inebriation. They did not appear to me to be courageous : I have however been informed that there are Icelanders among the troops of the King of Denmark : they are good sailors for coasting. The Dutch, who attend the fishery, frequently entice them to serve on board their vessels. They are judicious, fond of the arts and sciences, play much at chess, and are greatly attached to the game. Many of them whom I met with speak Latin : numbers of them go to study at Copenhagen, and with success. There are as well colleges at Skallholt and Hoolum, to which the Icelanders send their children, who most of them make progress in liberal knowledge.

In the year 1000 they were plunged in the darkness of idolatry. They paid divine worship to Jupiter, under the name of Thor, and to Mercury, under the title of Odin : these were their only divinities. The Catholic religion was some time after established, but in succeeding times banished by Christian III. of Denmark : at present they are Lutherans of the church of Augsbourg. This doctrine was not established among them without bloodshed. A Catholic bishop, of the strictest virtue, at the head of a powerful party, resisted the progress of error ; he maintained himself for a long time, but became the victim of his zeal, it costing him his life.

The Icelanders trade with a company of Copenhagen, which has an exclusive privilege, the price of a certain consideration paid to the king. This company, which I have before mentioned, establishes factors or directors in every part, who have warehouses full of goods, which in course of the year they sell to the inhabitants. This continual and daily sale does not hinder a great consumption every year at the arrival of every vessel in either of their ports. The articles of exportation consist of dry fish, salt mutton, salt beef, butter, fish oil, tallow, wool in the grease, wadmel, fine and coarse jackets, woollen stockings and gloves, sheep and foxes' skins, sulphur, feathers, and edder-down. The articles of importation consist of all sorts of iron ware, dry bread, beer, brandy, stuffs, flour, fishing-tackle, planks, carpentry, tobacco, and horse-shoes. The Icelanders barter the productions of their country against whatever they need. Money is scarcely known among them. All sales, all contracts, in one word, all business is negotiated for fish, and with such every thing is paid for according to valuation : an ell of pig-tail tobacco is the price of a fish. Thus fish and tobacco may be considered as the money of the island.

The government of Iceland remains to be mentioned. This island is divided in four parts, or provinces, the northern, the eastern, the southern, and the western, governed

by bailiffs. There are eighteen or twenty cantons, each of which comprises fifteen or sixteen parishes. All these parishes are directed by two bishops; one governs the northern, the other the southern part. The seat of the sovereign council is Bessefied, under the direction of a grand bailiff, who resides there. The king, for the receipt of taxes, maintains a seneschal at the same place. These two principal officers render an account to the governor-general, who dwells at court. This is the whole of what is interesting, without extending beyond the bounds I have prescribed to myself, which I can say of Iceland. I now take up the thread of my journal.

### THIRD PART.

*Containing the Course from Iceland to Berghen; Description of Berghen, of Norway, and the People situated North of Norway.*

As I had ordered all the fishing vessels which the gale of wind of the twenty-ninth of May had obliged to take shelter at Patrifjord, to inform the whole fleet that I should remain a fortnight longer in that road, in order to be nearer to render them assistance, and that they might not be under necessity of groping for me, as it were, in foggy weather, I remained in the same position to the fifteenth of June. I shall here remark, that any king's ship which may be sent to protect the fishery, can never be more effectually serviceable than by giving a general rendezvous to all vessels who may stand in need of succour or repairs; for the fishery of Iceland is so extensive, that it would require four frigates for its protection; and there are in these climates such thick fogs, that it is sometimes impossible to perceive a vessel at the distance of musket shot.

The fifteenth of June, in the morning, in the prospect of a south wind, I caused a small anchor with a towing line to be heaved out to the S. S. W. to be the better enabled to raise it easily and quickly either from the frigate, or by means of my long-boat. The strength of the anchorage, the depth of water, and the projection of the inlet, inclined me to this expedient. It was calm all day, I weighed my two main anchors in the afternoon, and at nine in the evening, the wind southing, I set sail. I did not ship my oared cutters before I was out the points, lest it should have fallen calm, and I have need of them to tow me. I forgot to observe that south of the southern point of Patrifjord, outside, is an inlet of yellow sand, which serves as a mark at four leagues distant, and is a beacon on that side.

The sixteenth, I took bearings along the coast. The seventeenth and eighteenth, the wind varied from W. N. W. to S. W. a light breeze, and foggy. The nineteenth, being in that part of the sea, and on the precise spot where formerly were several islands, under the name of Gouberrmans, I founded and found one hundred and forty fathoms of water, muddy bottom, mixed with herbs.

The sketch of these islands was taken by some Danish engineers, who drew the map of Iceland. The islanders relate that they formerly consisted of nine; that they were no more than four leagues from the main island, and that they were swallowed up during an earthquake: what is certain respecting them is, that they are noticed in all maps, and that there now remains no vestige of them, their former residence being that part of the coast where now is the greatest depth of water. It is not more difficult to imagine that these islands may have been swallowed up by an earthquake, or owing to subterraneous fires, than to conceive, as does a celebrated naturalist \*, that Iceland itself

\* Egerhardus Ola. de Igne Subterraneo, page 14.

is the production of a volcano, thus being a child of the earth. The same day at noon, having taken the latitude, I perceived myself exactly upon the line of the polar circle : I was desirous of continuing my course towards the north ; but was stopped by a chain of ice which extended from the North Cape as far as the eye could distinguish to the N. W. I did not choose to expose myself to it with a frigate of a weak description, which was leaky, and which from its length was difficult to navigate amid islands of ice. I thought it therefore expedient to veer about to the south ; and as I was obliged to go into some port in order to take in wood and provisions, I preferred Berghen in Norway, whilst the fishing vessels were employed in seeking a passage between the ice to reach the isle of Grims and the point of Langernefs.

On the twentieth, at midnight, as we were steering W. S. W., to pass at large the island of Birds, the wind N. E., and the weather foggy, a cry from the fore-castle warned us of being upon the ice. At the same instant I saw on the starboard quarter large pieces, which made part of a bank of ice, the extremities of which were before me. I immediately brought the ship to larboard, to double it with the wind, and passed so nigh that I struck against several detached fragments, but without damage, although the frigate received rather rude shocks from the contact. It may not be useless here to mention some expedients which may be of service to those who should for the first time be entangled in ice. It is no ways wonderful that such persons should be intimidated at the sight of these enormous masses, which will frequently break of themselves about them with a horrid crash : their dread however will disappear on learning that vessels have frequently taken shelter amid the ice, and that navigators frequently resort to it for protection from storms, on account of the sea being always smooth when surrounded by it ; amidst it the vessel rides as if in harbour : but it is requisite to guard the outside of the ship with the ends of old cables, mattresses, or pallasses. A ship may even be moored along-side a piece of ice, fixing in it iron crows of five feet long, to which small cables are fastened at head and stern, taking care to make them tight on board by means of the capstan. In the absence of iron crows, graplins and iron bars are made use of, which are driven into the ice with mallets. The sails are taken in and brailled, and a ship rides there as well as beside a wharf. Care must be taken not to moor to a mass of ice of too much elevation, since such are often subject to break and roll over. When the sight of an opening in the ice, a change of wind, or the neighbourhood of shore, induce to go about, the vessel is steered by help of her lashings, the same as in port. If desirous of breaking way, either to enter or to go out, two spare top-masts are taken, the thicker ends of which are lashed to the mizen-chain wales, and the two small ends are made to form a fork before the prow, which fork is supported by lashing under the bowsprit : this fork serves to separate the ice in front of the vessel. If it be not considered proper to use this tackling, a fragment of ice is chosen in a small degree more elevated than the prow, which is steered upon under easy sail, and when got under the cutwater, all sails are set. This lump of ice driven by the vessel, drives forward in its turn all those which obstruct the way of the ship, which by this means receives no injury.

The twenty-first, twenty-second, and twenty-third, the wind continually varying, and the sea running high, I steered S. S. W. and S. W. quarter S. ; and the twenty-third, at midnight, reckoning myself ten leagues W. of the Birds' island, I founded and found two hundred and five fathoms water, with sand as black as gunpowder. The quality of the bottom brought to mind what I had heard the captain of a fishing vessel say, that he had met with a rock N. W. of Birds' island, at a distance of seven leagues ; that he had founded all round and found twenty fathoms water, with a bottom of black sand.

The resemblance of the bottom which I found with that of the environs of the rock, seems to confirm the existence of it.

Before leaving Iceland, it is right I should impart to the reader the knowledge I was enabled to acquire of the ports situated west and north of the island. I shall begin with Adelfiord, north of Lufbaye, and shall continue the same to the point of Langernefs. Adelfiord, or the bay which bears that name, is very extensive and deep, but the anchorage is bad for large vessels, as the coast is rugged, and it is necessary to anchor close to the shore. The fishing vessels lying at anchor have the poop so near the land, that the sailors go on shore by means of a plank laid from the ship's side.

The bay of Direfiord is as fine and as large as that of Lufbaye; there is no danger in entering it, care being taken of the squalls of wind which come from the gorges, as I before mentioned in speaking of Patriford. The anchorage is good every where for vessels of war. At the bottom of the bay are two points in the shape of a sugar-loaf, which at sea are taken for two pyramidal islands, and which mark the bay of Direfiord on coming from sea.

The bay of West Norderfiord is as extensive as the preceding; there is good anchorage in the first inlet to larboard on entering, but it is suitable to those vessels only which mean to sail again directly, for shelter it is better to proceed higher up. In the middle of the bay there is twenty-five fathoms water; but at the extremity the anchorage is in sixteen to eighteen fathoms, with good bottom: there are rocks both on the larboard and starboard quarter on entering, but they are all above water.

The bay of Pikhol is too open, it is fit only for fishing vessels or corvettes, the anchorage is close to the minister's house, where there is shelter under the north point.

The bay of Bolk-Bogt is more properly a gulph than a bay; it is little known. The fishermen seldom proceed up it; notwithstanding an owner or master told me, that he had once sailed to the bottom of the bay, and that behind a point of land which projects, he found most excellent anchorage below the house of the factor of the company. He even said, if he were obliged to winter in Iceland, he should prefer this spot to any.

The roads of Seertel Bay are very fine, there is excellent anchorage for all shipping: a ship may anchor to starboard on entering after doubling a point, but the best anchorage is at the foot of a remarkable cliff at the bottom of the Roadfitt. These roads are distinguishable by a hill of grey sand, perceptible at a great distance.

In the bay of Radkol there is anchorage in twelve fathoms water, with a sandy bottom. There is shelter from the wind on the south and the east, but with a N. or W. wind a vessel would be much exposed.

The roads of Rakbaye are very large and very good; fifty vessels of war might easily anchor in them; the best place for casting anchor is at the extremity of the bay, on the south side, half a league from there. Drift wood is met with here, cast on shore by the sea.

In going out of Rakbaye the North Cape is on the starboard quarter. Eastward of the North Cape, on the side of the gulph of Orgel Bogt, there is a cascade or river, which falls in large volumes of foam, and with a considerable noise; it is a land's mark on the coast. This cascade or river is called Watalope.

In the whole of the gulph of Orgel Bogt, there is only the bay of east Nordefiord, where a frigate can take refuge; its anchorage is to starboard on entering, two cables' length from the cabins of the Icelanders. The fishermen go for anchorage to the bottom of the bay; but they must pass a bar, over which at low water there is only twelve feet depth. The sea throws wood on shore here also; a river empties itself into  
this

this bay which abounds in salmon. At the eastern point of the gulph there is a reef, or chain of rocks, which proceeds farther out than is noticed in the Dutch maps. Eastward of this reef four islands are distinguished pretty high, and very lofty, the fourth is at the entrance of Klipbaye, where there is anchorage close to shore, either on the starboard or larboard quarter; but heed must be taken of a large bank in the middle of the bay, and which does not allow of luffing. Eastward of the four islands a large flat island is seen, called Ulakiland, at the foot of which westward there is an anchorage. This island is in the S. one quarter S. E. corrected, from the isle of Grimes, where the anchorage is in the southern part. There is shelter from the north, but a vessel there must be prepared to sail upon its blowing S. E. or S. W. The tides run very strong, the direction of them E. and W. Good anchorage is found at the point of Roodchoke, in ten fathoms, with sandy bottom, south of a round rock, which is safe and very distinguishable; sheltered from S. E. winds. There is besides good anchorage at Oudemans, safe from all winds, to S., but when it veers to the N. the ship must change her birth. This is the summary of what I learned from experience in my own vessel, and from several fishermen with whom I frequently conversed on this subject. Lower down I shall speak of the roads and ports of the east side. I do not conceive that any one will be surprised in reading this journal at noticing my entrance, whether by night or day into all the ports of Iceland. No one is ignorant that under the poles there is six months of day, and the same length of night; that the nearer the poles are approached, the longer the days and the nights, according to the season of the year. Every one knows also, that the sun gives its light by refraction when below the horizon; and that this is called twilight; that that which precedes the rising is called the dawn, or morning twilight, and that that follows its setting is named the twilight, or evening twilight; moreover, that the farther the observer proceeds from the equator, the longer the twilight. Thus it may readily be conceived, that in Iceland, which extends northward as far as to the polar circle, by favour of the twilight a continual day reigns from May to September, so as to enable a person to read and write at midnight, and that the sun does not set below the horizon for eight days before and eight days after the summer solstice: that is to say, from the twelfth of June to the first of July.

The twenty-fourth the wind varied, making the entire circle of the compass; sometimes gentle and at others violent, but continually a heavy sea. I steered S. one quarter S. W.; and the twenty-fifth at noon was in latitude  $60^{\circ} 58'$ , and longitude W. of Paris  $19^{\circ} 30'$ . By the map I perceived I was  $3^{\circ}$  E. of Ferro, 110 leagues distant, according to the chart of Mr. Bellin; and according to the Dutch charts, from the same station, Ferro bore E. N. E. 42 leagues distant, making a difference of 68 leagues, or nearly  $7^{\circ}$  in that latitude. The rock at S. of these islands, according to Mr. Bellin, is in latitude  $61^{\circ} 17'$ : according to the Dutch  $61^{\circ} 44'$ : that is to say,  $27^{\circ}$  more N. These differences as well in latitude as longitude surprised me, and made me hesitate as to the course to steer. I resolved, at length, to make the southern point of the isles of Ferro, according to the latitude described by Mr. Bellin. I steered accordingly and observed the variation of the needle in the evening to be the same as the day before,  $23^{\circ} 30'$ .

The twenty-sixth at noon, having made 43 leagues of way under a fresh breeze from the E. S. E., I observed the latitude to be the same as the day before,  $60^{\circ} 58'$ , and the longitude  $14^{\circ} 58'$ . As I had no difference of latitude after having steered E. S. E. for twenty-four hours with great circumspection, I conjectured that the difference arose from two points of wind, or  $22^{\circ} 30'$ .

The twenty-seventh, at three o'clock in the morning, having run E. one quarter S. E., with a N. and N. N. W. wind from the twenty-sixth at noon, the wind fresh with a high sea,



sea, we made the Ferro Isles. I passed two leagues south of a rock laying south of the islands, and distant from them by appearance about a league. I perceived breakers at half a league from this rock. At noon I took an elevation under the land, and found, after making a back observation to try my former by, after noticing the bearing, and casting my log-book, that these islands are correctly laid down in Mr. Bellin's map. We found  $18^{\circ}$  of variation from two corresponding elevations. After doubling the isles of Ferro, I directed my course to the northward to make the Shetland Isles; but not falling in with them on the twenty-eighth, at four in the morning, and judging by the way I had made, that I must have passed them, (for I had continually steered E. one quarter S. E.) I tacked to the S. E. one quarter E. to proceed to Berghen. I believe that the currents carried me towards the north in my passage from the isles of Ferro to Shetland, I must observe as well that in the passage I had two floods to one ebb tide.

The twenty-ninth, the wind fresh and strong from the N. W., the sea very heavy, with a thick fog. In such weather I was not desirous of encountering the coasts of Norway. I kept under main and forefall, and employed myself in taking soundings, waiting for more favourable weather.

The thirtieth, at five o'clock in the morning, the weather brightening and the wind becoming lighter, I steered E. S. E. with a north wind to make land; but observing at noon that I was in latitude  $59^{\circ} 12'$ , I saw that I was too far to S. to enter by the way of Cruxford, which is the shortest and the most usual passage; I worked to windward, it blew N., and I steered N. E. As I was by observation  $18'$  more to the south than by my log, I fought for the cause of this difference in the position of the islands, and the coasts of the north, which, by the manner of their lying, govern the following course of currents. At flood the tide flows from the W. S. W. upon the isles of Shetland, and, changing its direction on ebbing, flows S. S. E. varying its course according to the line of the coast, as far as to the straits of Dover, but the waves meeting here with another flood, flow back, and throw themselves upon the coasts of Jutland, which sends them back to Cape Derneus, from which they take their course, direction, and motion, according to the position of the coasts of Norway: this, according to my opinion, is the cause of the current, which runs always to the south on the coasts of Shetland, and that which runs always north on those of Norway: this general movement not interfering with the ebb and flow incident to each particular spot. It is here that I should notice the observations I made for knowing with certainty, by sounding, whether a ship be approaching the coast of Shetland, or Norway, which is of consequence, and interesting for those vessels which cruise or navigate these seas, almost continually over shadowed with fogs.

When in the middle of the channel between the isles of Shetland and the coast of Norway, or but little distant from the middle, there are 65, 70, and 75 fathoms of water, clean and fine sand. On nearing Shetland the depth does not diminish, it rather increases in different places; but the bottom is different, the sand is larger, darker, and mixed more with gravel the closer you get to shore. On the contrary, when approaching the coasts of Norway, the depth of water sensibly increases, the bottom changes, becoming more muddy, and this mud becomes less dark as you go near the coast of Norway. This channel is called the Great Tun by mariners, and the passage between the Arcades and the Shetland Isles in the north or south of the little island Fairehil, which is in the middle, is called the Little Tun.

The first of July, at three o'clock in the morning, having steered E. N. E. with very little wind from the N. from the preceding noon, I made land; it was perfectly calm, and

and nature was as it were asleep ; but the sun appearing above the horizon re-animated her, and brought us a breeze ; this is what is frequently experienced in the torrid zone ; the reason of it is this.

During the whole of the day, the sun by its heat expands and causes to rise from the plains, and above all from the surface of the sea, aqueous particles and bubbles of rarified air, which it attracts to a distance from the earth. Those which ascend the last, fall again almost immediately after sun-set, they approach each other in their fall, and cause that first coolness of the evening which is called serenity ; but all the other particles which in the long course of the day, have surmounted the gross airs, and become in equilibrium with the first strata of that air in a superior region, remain suspended there during the calm of night ; at sun rising the first rays of heat being felt by the chilled and contracted air, necessarily dilute it. One mass of air expanded by the heat drives on another, which meets with resistance from a third ; this motion of the air becomes a wind, and the atmosphere is affected by it in a less or greater degree.

At eight o'clock, being yet three leagues from shore, some Norwegian pilots came on board, who informed me that I was a great deal to the south of the passage of Cruxford, but that there was a passage two leagues north of where I was, and that if by luffing, I could get up these two leagues, (for the wind was north,) they would take me into good anchorage, where I might wait for a south wind to get into Berghen. I luffed therefore to head the wind. At noon I observed the latitude ; and at four o'clock a storm arose, which determined the pilots to make the land, in order to seek the passage to the north of the isle of Bommel ; through which they steered me to anchor at Ingøen. As the anchorage is difficult on the coast of Norway, that is to say, on the currents of Berghen, and as they require great precaution, I shall detail the methods I made use of in anchoring ; it would be proper to inform the reader first, what observations I made on the coast.

I first assured myself by three observations of the variation : the one an eastern, the other by azimuth, and the third meridional. The agreement of these three observations shewed me that the variation of the needle was  $17^{\circ} 50'$  on the coast of Norway, under the isle of Bommel. I took the latitude at noon, and from the bearings I found the isle of Bommel to be  $15'$  more north, than what it is set down in the large chart of the Neptune. On my second voyage, I made the same observation, and found the whole of the coast of Norway, to be  $15'$  more north, than what it is described in the above-mentioned chart. In short, I remarked that the exterior grounds, and bed of the channel of Berghen, almost wholly resemble each other. There are every where rocks of the same elevation, fashioned and craggy alike ; which renders making land a difficult matter, as nothing short of perfect experience can enable a person to know where to make for land. It may be said that in an extent of twelve leagues of coast on the side where I made for shore, there is only mount Bommel in the island of that name, that is distinguishable from others. The objects of the continent seldom serve for land-marks, on account of their being generally hid by fogs, and covered with snow, besides being greatly in land. There are several passages to enter the canal or river of Berghen. From the isle of Schuttness to the town of Berghen, is sixteen Danish miles, about ninety English, and in this extent of the coast, there are eight passages to enter the canal. In coming from the sea to the north of Berghen, there are also two passages much frequented, the most northerly of which is only six Danish miles from the town. North of these are some other passages, but they are so little known, so little frequented, and so difficult, that they are not worth mentioning.

These

These are the names of all the passages beginning with the most southerly; 1° Stavangerfiord near Stavanger, sixteen Danish miles from Berghen; 2° Schuttnefs, which is the beginning of the canals, fourteen miles distant; 3° Udeiro thirteen miles; 4° Bommelfiord eleven miles; 5° Solmenfiord five miles; 6° Papefiord four miles; 7° Cruixfiord three miles; 8° Jettefiord nearly three miles west of the town.

The two passages or openings which are frequented at the north of the town, are 1° Herlefiord; this passage is between two islands advancing some distance into the sea, known by the names of Henne and Feyer, five miles from the town; 2° Poensfiord; there is in the middle of the second passage a little lofty island, called Holmen Graac. It serves as a land mark: this passage is six miles from Berghen. It will be seen by what I have observed that it is better to make land south of the town, on account of their being in that quarter more passages than in the north, besides which, they are more practicable, and the currents run towards the north, the whole length of the coast; in other respects the wind must decide; the best latitude at which to make land I consider to be 59° 40'.

A vessel may make for land without apprehension; it is very safe, the coast of Norway presents a dreadful aspect every where, it is a continued chain of rocks, the sight of which makes one shudder; but nothing should prevent making for them; for as I before observed, a ship may range very close under them, and when at two leagues from shore, pilots always come out, unless there happens a storm; but in fine weather they proceed even as far as three leagues to get on board a ship: they row with all their might as well, to be first, for the first boat which touches the vessel with an oar, has a right to furnish a pilot, the others then return, but not without asking for biscuit or brandy, of which they are extremely fond.

I have before observed that the land may be approached at all times, however when the weather is foggy, with a strong W. N. W. wind, unless the case were urgent I would not advise making for shore, seeing that there is no shifting from a W. N. W. wind.

I return to my anchorage at Ingefon, and as all anchoring in the river of Berghen requires care, I shall describe the method I used at Ingefon; it will serve as instruction for all vessels which may be going to Berghen; that port, which of all in the North Sea yields the greatest resources, there being a mast yard, a capital rope warehouse, and plenty of provisions. By chance a vessel may be obliged to enter the passages without pilots, either owing to the superiority of an enemy's vessel, or to storms, and what I am about to observe will be of great utility.

On coming from sea with a north wind, keeping Mount Bommel at six to eight leagues distant at S. E. the ship must continue its way steering as close to the wind as possible, in order to keep before the wind, and north of the isle of Bommel. At about a league from shore, an opening will be seen between the rocks, which is the passage of \*Solmenfiord, five miles from Berghen. Imagining the reader at the entrance of the passage I recommend him the expedient I made use of. The wind was northerly, I kept close to the islets and rocks in the north, which I passed at two cables' length, in order to avoid the stones which are in the middle of the passage under water, and which I left to starboard going before the wind. At a quarter of a league from the isle of Rootholm, I made in shore to coast round this island, till I should discover an opening to leeward. I then bore up for the inlet steering S. and S. quarter S. E. I went up this creek, and when about a cable's length from the bottom of the bay, I cast anchor to larboard, I put the helm to starboard, to round to the wind, letting the cable run. As

\* This passage is nearly a league wide; on my second voyage I luffed up it.



foen as I had anchored, and the frigate rode at her moorings, I sent a tow-rope ashore to the eastward, which was lashed astern to starboard: by this means the vessel does not lay with the current, but it is secure. The main-anchor is heaved into eighteen fathom water, sand and gravelly bottom; there is six fathoms below the vessel, and as the bottom rises in a sloping manner, there does not need more than forty-five fathoms of cable out, comprising the plating. The tow-line is moored to a rock on shore cut for the purpose. Great care must be taken to plat the cable, and examine it often, for there are rocks in many places at the bottom. The tide does not run strong. The difference of high and low water is eight feet; the tides are of six hours. I forgot to observe that five-and-twenty fathoms of bitter must be used in anchoring, and to recommend to be always ready to let out cable so as to ride easy on the wind. Moreover it will be necessary to have another anchor in reserve, ready to be cast, in case the first should not hold. It is needless to advise the coming to an anchor with as little wind as possible. I observed that a vessel is sufficiently well moored with a tow-rope astern; for as soon as the wind souths, she sets sail for Berghen. If the wind should happen to blow S. S. W., it would be prudent to have a second tow-rope to larboard, on the western side.

When about to sail, a vessel must pay out tow-rope while heaving at the capstan. The anchor is weighed and catted, the topfails and mizen-topfails are then tallied, the tow-rope is paid out, or cut, and an oared boat sent ashore to bring it after.

The second and third, we had a dead calm. I employed myself in taking a draft of this road, or rather this basin. At musquet shot from this anchorage, as well as near all others along the river, you meet with a tavern, provided with meat, fish, eggs, milk, beer, and in short every thing the country affords.

The fourth, at nine in the evening the wind S. with fog, we sailed from Ingefson for Berghen. We made nearly eight leagues among the rocks, which we passed very close to, during a thick fog that almost entirely obscured the feeble glimmering of twilight. On the road the pilots made me notice several anchorages, both to starboard and larboard, as well for large, as small vessels.

The fifth, at four o'clock in the morning, the wind at S. E. but weak, we anchored at Behoriaven, nearly three sea leagues from Berghen. The starboard anchor was cast in twenty fathoms water, sandy bottom, with flint stones. As soon as the frigate rounded, I sent two tow-ropes ashore to two iron rings fixed for the purpose of vessels to moor to, there are similar rings along all the canals of Berghen, wherever there is anchorage; for it must not be conceived that a vessel can anchor anywhere although, enclosed by land and rocks; sometimes it is requisite to proceed three or four leagues to get to an anchor, on account of their being not less than eighty to one hundred fathoms water between one anchorage and another. At two o'clock in the afternoon we had a weak S. wind, and sailed, when under sail it veered to W. N. W. and N. W. I had great difficulty in doubling the last point, which forms the entrance of the bay of Berghen on the side of the west, at which point there is a buoy to mark a sunken rock. In the middle of the bay, a league from the anchorage, we experienced a violent current which prevented our advancing, and kept us as it were at anchor, notwithstanding we had a good wind, and all sails set; this current was occasioned by the ebb-tide emptying itself from the two bays, the one north, the other south, of the citadel. I manned all the boats of the frigate, and sent them before to tow her. By dint of rowing, with all sails set, I made shift to pass this current, which otherwise might have carried me on to the north shore. At six o'clock I anchored in nine fathoms, with a sandy bottom, and the frigate lying with her head to windward, after paying out forty fathoms of cable, struck on a flat rock, the only danger to be apprehended in this roadstead: there were fourteen

feet two inches of water on the rock, but the draft of the frigate was fourteen feet three, and it yet wanted four or five inches of low water, I immediately lashed a tow-rope to a dead-head, which was out with my anchor, and which served to shew where to weigh it. I pumped out my water, and heaved at the tow-rope, as well as the cable, but all in vain. We were obliged to wait for the flood-tide. This accident would not have happened if the Norwegian pilots had cast anchor more to the north, as I wished them in sixteen fathoms water. It only occasioned us however a great deal of trouble, and owing to the care of M. Duchatel and my officers, we had no confusion, which in similar circumstances is extraordinary. When afloat I heaved my main-anchor and got to the entrance of the port, my great stream-anchor was in ten fathoms water, sand, and gravelly bottom; my bower-anchor, S. E. of the first in six fathoms, muddy bottom. I sent a tow-line ashore, which I moored to the post of the Corps de Garde, and a small anchor to N. E. These precautions made me perfectly secure, but I was surrounded by a number of merchant vessels, and that is not a proper mooring for a large frigate. Ships of war in general anchor at Sandvick, they go entirely into port, where they ride in four moorings; but when desirous of going thus far into port, and get within the citadel, it is required that the powder should be landed.

To avoid the rock on which I struck, it is essential to notice a buoy which points out the place it lays in. What deceived my experienced pilots, was the buoy's having been carried away two hours before by a Dutch vessel, which struck as well as I did on the same rock; but in case the buoy should not be seen, it must be remembered that the rock lays S. E. half a cable's distance from a buoy, which serves as a dead-head to moor to.

As soon as I had arrived, I sent an officer to pay my respects to the governor of the town, who lives in the castle, and the next day accompanied by my staff I paid him a visit. We went as well to see Mr. Deschiel, grand bailiff of the city, and territory of Berghen. He loaded us with kindness, and offered to render every service of which we stood in need. We did not meet with so favourable a reception from the people. The merchants, workmen, and all those to whom we had recourse for what the frigate wanted, treated us coolly. They fled before us in the streets, and even refused in the public markets to sell to my maitre d'hotel. We owed this reception to the bad conduct of some captains of privateers, who under the title, and in the uniform of his majesty's officers, which they had the impudence to take upon them, had during the last war committed so many excesses in this town, that the grand bailiff, fearing we might meet with insult, thought right to publish that we were truly possessed of the king's commission, recommending civility towards us. Our mode of acting and the discipline we maintained, soon shewed them who we were. A sailor having stolen a silver spoon out of an ale-house in a fit of drunkenness, I caused him to be dipped from the main-yard for three successive days, and but for the intercession of all the ladies at a grand supper given by Mad. Deschiel, his punishment would have been of longer duration. I gave a dinner on board the frigate to Mad. Deschiel, and all the principal ladies, to the staff-major, the officers in garrison, and all the principal persons of the place. This dinner which was succeeded by a ball, spread a gaiety through every quarter of the town, where the healths of the Kings of France and Denmark were drank, under the discharge of the cannon of the frigate; notwithstanding this, the people could with difficulty forget, that a Frenchman, the captain of a fine vessel, or who represented himself in that character, had threatened upon a refusal of some indiscreet demand, to fire upon the citadel, and that upon several occasions their women had met with insult from them.

I cannot

I cannot here refrain from a reflection on the high idea that the public entertains of certain intriguers, whose merit consists in their praising themselves; who propose the grandest schemes, because they run no other risk than that of falling back into the nothing from which they are studious of raising themselves, and whom we every day see fail in their enterprizes with shame, although supported by an ignorant cabal, prejudiced against the royal navy. The proofs of this blind prevention are but too widely spread. Even in the Encyclopedia most indecent absurdities are to be founded under the head marine. An abstract from a work intituled *Reflexions of a Citizen on the Navy*, is inserted there. This is the work of an officer, a merchant of Dieppe. The rank of this man sufficiently shews that he is a blackener of the characters of his majesty's officers. He says, "the gentleman sailor takes no pride in his occupation, he despises seamanship, &c." I must however do justice to his sentiments, when speaking of war and armaments, "The captain" he says, "ought to be completely master of the fighting his ship, &c. To wage war with the English, their commerce must be attacked, and ourselves be satisfied with preserving our possessions; it is precisely playing with a chance of losing, and none of gaining, to act otherwise: it is against the English commerce alone, that we should wage war; no durable peace with this nation can be expected without following this policy. Let England tremble for her trade in a war with us, this is the important point. The enemy in the war of 1744, made considerable insurances on our merchant vessels, in this war few, and those at very heavy premiums. Why so, because they imagined that a war on the continent would cause us to neglect our navy, and they were in the right; it is the finances alone of the enemy which support her navy, and its finances depend upon her trade; let us then make war on her commerce, and on her commerce only. Take a colony from the English, they murmur; ruin their trade, they will revolt. We have three hundred leagues of sea-coast to protect. This case requires a considerable navy—what! Are vessels requisite to guard our shores? Delusive error! We want soldiers only for that purpose, a hundred and fifty thousand men shall be put in arms for saving's sake, nevertheless the shores will be insulted; a hundred and fifty thousand men are clad in arms, and it is evident that twenty-five sail of the line at Brest, and fifteen thousand men near that place, will be sufficient to prevent any such consequence; nay, any thing except the prejudice in favour of soldiers." It is visible that this seaman is possessed of judgment, although he does not display the necessity of a navy, with equal eloquence with Mr. Thomas, in his eulogy of Duguay Trouin. However, that orator guided by an excusable prejudice, seeing that he had never frequented the sea-ports of his majesty; lets escape him some critiques in favour of the merchant vessels, to the injury of the king's ships. Labouring under the same prejudice, a monk has manufactured an historical journal of a voyage to the Madeira islands in 1763 and 1764. The editor of this insipid journal, printed at Berlin in 1769, seems to have left his convent for no other purpose than to reap in another hemisphere an ample harvest of lies, and invectives. Returning to Europe, he takes pleasure in pouring the coarse poison of his graceless pen upon the navy, in a digression which contains as many blunders as phrases. "On the fifteenth of June 1764," says the stupid son of St. Benoit, "a vessel is seen to windward in the N. W., the flag and pennant is hoisted, a flag is plaited and hoisted, and we lay close to the wind; in spite of all these pretended signals, the vessel continues its course." This learned Cenobite imagines that a vessel, who should so act can be no other than a French vessel. Upon this his bile inflames, his love for his country and the commonweal puts in his mouth a violent diatribe against a navy which he ought to respect; but in what order has this monk learnt, that a love for one's country is shown by exclaiming in a Hottentot dialect, that "the license of the reds, causes the fla-

very of the blues, that the officers of the royal navy possess prejudices which raise them much above the profession of sailors, and make them imagine it unnecessary to learn the art of seamanship in order to practise it, &c." If this paper-stainer had read the ordinances of the marine, he would have known that there are schools established for the education of young people in this art; if he had been at any of the sea-ports, he must have seen officers applying themselves to the theory, and anxiously desirous of reducing this theory to practice; if he had taken the trouble to seek for information, he might have learnt that it is necessary before a man can become a captain of a merchant vessel, that he should have made at least two voyages on board of a king's ship, and obtain satisfactory credentials from his commanders; which pre-supposes that it is on board these vessels alone that proper discipline, and a perfect knowledge of the necessary subordination and service at sea, can be acquired; and that the officers in the navy are the competent judges of the merchants' captains: had he sailed on board vessels truly commanded by his majesty's officers, he would not have affirmed that "every vessel is obliged to strike when a king's ship orders her to do so, by firing a gun and bringing round the pennant to the mast, at the part it ought to be, according to the rank of the officer commanding the king's ship." He would have known that the pennant is hoisted, and not brought round, and that a merchant vessel is not obliged to strike, but to bring to, in order to receive orders. If he had resided in a sea-port, he might have learnt the language of a profession which, had he possessed any modesty, he must have been persuaded is a necessary acquisition to him who professes to give lessons; he would have seen how highly the Barts, the Duguai Trouins, and the Cassards are respected: all these great men were entitled to the stations they held on board the king's ships; they had fought in desperate engagements, made many skilful manœuvres, taken ships of war from the enemy; let any one present himself after such striking recommendations, and certainly he will be received with as much welcome as distinction. Notwithstanding the officers of the royal navy are much above such paltry aspersions as those lanced from so palsied an arm, as that of the traveller to the Malucca islands, I have not been able to restrain the first boilings of anger which the reading of the fastidious volume of that monk-errant occasioned me.

During the stay I made at Berghen I founded, and caused to be founded, the port, the roadstead, and the neighbourhood of the town; respecting which I shall say more in succession, intending now to give a description of the town and territory of Berghen. I shall even say something of Denmark, Norway, the Laplanders, the Samoiedes, and other people of the north of this second kingdom, which are but little known, and of whom many fabulous tales have been related. As I have conversed with and received my information from persons of education who have travelled in that country, receiving from the fountain-head my accounts, I think they will meet with estimation.

The city of Berghen, formerly Biorginn, capital of the diocese of that name, is the largest and most considerable trading city of Norway; it is situated at the bottom of a valley, surrounded and defended by seven large mountains: its fortifications on the sea-side do not deserve mention. Formerly there were thirty churches and convents in Berghen; at present there are only four parish churches, three of which are Danish, and one German. The churches are built of stone, as well as the houses of the noblemen, consuls, and principal merchants. The most remarkable building is the custom-house, at the entrance of the port. There is a Latin school founded in 1544, and endowed by Peter the bishop: its revenues were increased by Frederic II. and his successors. At this time it maintains twelve students in philosophy, mathematics, history, and the French language. The marine school was formerly sufficiently numerous, but it is fallen into decay.

Berghen

Berghen formerly had the privilege of coining; this she retained until 1575. As yet there is preserved in the cabinet of medals at Copenhagen, one which was struck here in the reign of Eric. The city was built in 1070 and 1071. Several councils have been held here. As the greatest part of Berghen is built of wood, this town has frequently been a prey to the flames: it was burnt in 1248; eleven churches were reduced to ashes: the same misfortune happened to it in 1472, in 1623, in 1640, in 1702, and in 1756; at this last fire sixteen hundred houses were destroyed. The city is very extensive. The streets are not straight, and are irregularly paved with large and small stones, but are kept very clean. The houses, although built of wood, afford a very pleasing appearance, from the diversity of colours with which they are painted: they are extremely pretty within; no gold or silver is seen, but the furniture is neat, and agreeably simple.

The city of Berghen may contain three thousand houses, and more than twenty thousand inhabitants: the inhabitants of Hamburg, Lubeck, and Bremen, annually resort there for the fishery.

The religion of the country is Lutheran, of the creed of Augsburg, known in Germany by the title of Evangelical; it is the religion of the sovereign, and prevails through all the possessions of the King of Denmark. All other religions are tolerated (but without allowance of public worship), provided they do not disturb the commonweal. Every inhabitant, whatever may be his religion, or station in life, enjoys equally the protection of the government; no one undergoes vexation for conscience sake.

As to the manners of the inhabitants of Berghen, it is difficult to satisfy the reader on that article, for it is composed of different nations; many Germans and Scotch have successively come to establish themselves here, and intermarried with the natives: in general the men are strong and robust, little polished, although affable to strangers from interest. There is but little nobility at Berghen; most of the inhabitants are merchants or tradesmen, dealing by wholesale or retail. There are however some distinguished families, but they are very few in number.

The women are in general fond of work; they employ themselves in their household affairs, and in commerce; they are not addicted to luxury; they receive strangers, to whom they are partial, with courtesy, and particularly the French, who are very welcome visitors; which occasions on the part of the husbands a great jealousy of them. The Norwegian women are handsome, but not well informed: more politeness is met with in other parts of Norway, but throughout the country Bacchus and Ceres find more votaries among the men than Venus. They are fond of spirits, and smooch a great deal. They make up assemblies, consisting wholly of men, and prefer them, which they call *estaminet*, to the society of the ladies; this engages them in turn to revenge themselves without ceremony, by the help of more amiable and gallant strangers.

The garrison of Berghen is composed of one battalion of regular troops, one free company of one hundred and fifty men, and a small detachment of artillery, making together six hundred men.

The commerce of the city of Berghen consists of all sorts of fish, fat merchandize, skins, and wood. These commodities are produced in the provinces north of Berghen. The haven is safe and good, and can hold a large number of vessels of every dimension. It has an additional advantage of never freezing, and being always navigable. The burghers of Berghen have about eighty vessels employed in external commerce, and with which they trade through the ocean, in the Mediterranean, in the North sea, and in the Baltic. Besides, upwards of one thousand vessels of different nations arrive there, bringing salt, grain, flour, brandy, and other commodities. They also send several



vessels to Greenland to fish for seals, the fat of which serves to make oils, very much esteemed for lamps. A very considerable traffic in grain of every description is carried on at Berghen, on account of the ground throughout the bailiwick being poor and sterile. Its inhabitants, particularly on the coast, are, generally speaking, fishermen: they are obliged to furnish themselves with what grain they may have occasion for from the warehouses in the city, which are always abundantly supplied. All the inhabitants to the north of Berghen resort there, from the distance even of three hundred leagues, to lay in their stock of corn and other commodities, Drontheim not possessing equal advantages: in short, Berghen is the granary of Norway. The river of Berghen, and all the neighbourhood of the coast, abound in fish. The most considerable and profitable fisheries are those of the cod and herring; it is from the produce of these that the Danish and foreign vessels take in their loading for all parts of Europe. These are the gold mines of the country. The stock-fish prepared at Berghen is in great esteem throughout the ports of Spain, Italy, Holland, Flanders, and even England. It is also exported to the Baltic, as well as cod dried and barrelled, which the Norwegians send all over Europe. A very large quantity of fish oil as well is shipped at Berghen, besides goats' skins, sheep skins, tallow, pitch, and planking.

I have now to mention the trade in *rogue*, of which there is a great consumption in Brittany: *rogue* is the roes of cod-fish; it is a bait without which there is no fishing for fardines. The cod fishery, for the purpose of extracting the roes, is carried on on the coasts of Norway from the beginning of January to the middle of April. Cod is taken at other times of the year; but it is within these periods only that the roe is found. The fishery begins in January on the coast of Nordland and Finmark, more than an hundred leagues north of Berghen. The fish descends successively along the coasts, always towards the south, as far as Berghen, and thirty leagues beyond to Schutnefs, where the fishery ends with the month of April, on account of the cod, then leaving the shore for the sea, in order to lay its eggs. The fishery does not begin at Berghen before the end of March. The Norwegian fishermen carry on this fishery in close places only: they use small boats of six or eight tons burthen. They have small wooden storehouses on shore, where, after opening the fish and taking out the roe, they salt and lay it in pyramidal piles, and transport it to Berghen after the end of the fishery in April. The merchants then buy the roes of the fishermen and barrel it. This fishery is seldom considerable in the bailiwick of Berghen, although it be of seventy leagues extent; it is deemed large when it extends to four thousand barrels. But the best fishing is on the coast of Nordland, the sea on which coast affords more fish than any other. The inhabitants of these northern countries bring to Berghen, the most considerable port in Norway, and that which is most resorted to by foreigners, the whole produce of their fishery, as well the fish as the roe, in vessels of from one hundred to two hundred tons burthen. The ice and storms hinder the arrival of these vessels before the month of May, so that it is impossible before that time to fix the price of *rogue*. In tolerable years, at the beginning of June, there are commonly fifteen or sixteen thousand tons of *rogue* in the warehouses of Berghen (the measure of the ton is about twenty-eight gallons Winchester), the price of which is commonly three or four rix-dollars, from twelve to fifteen shillings of our money; and in plentiful years, as low as two rix-dollars, or eight shillings nearly. It has even been known as low as a dollar, or three shillings and ninepence per ton; but in 1767 and 1768 the price was excessive. Never was it known so high, owing to a competition among the buyers; it was sold at from five to six dollars. This price, which is without example, makes it desirable, for prevention in future, and for the benefit of Brittany, that a single company should possess the privilege of

selling the roes to the fishers of fardines upon the coasts of that province. It is to be noticed, on packing the tuns sworn guagers attend to see them well packed and filled. Thirteen of these tuns go to a last, or two tuns English; weight is out of question. The freight paid at Brest, or any other port of Brittany, is about twenty-five shillings per last, with ten per cent. of average. The duties, which are trifling, and all the expences included, do not amount to sevenpence-halfpenny per barrel. This is all the information which I can give of the trade of Berghen and Norway.

I shall now sketch out an idea of the manufactures, and branches of external trade existing in Norway: I shall explain its mode of administration; but as it is united to that of Denmark, and as privileged companies formed at Copenhagen direct the external trade of the two countries, I shall first enter into a detail of the government and forces of Denmark.

The government is despotic, but mild, and tempered by its solid and fixed constitution. The provinces are governed by bailiffs, charged with the maintenance of the laws, the inspection of the king's revenues, and the special protection of the country people. They have no jurisdiction over them but in matrimonial cases; in any others they can act only as mediators: they cannot prevent access to the throne, nor even keep those from appealing to superior tribunals, who may have complaints to prefer against them, which occasions great mildness in the administration of law in the provinces. The king is the soul of justice; he reserves to himself the approbation of all decisions. No sentence can be put in effect before it has obtained his signature, whether it effect the life or credit of the individual. In this is seen an important law, which proves the wisdom of the legislator; it is found in the nineteenth chapter of the first book of the Danish code. "Any person accused of a crime, of whatsoever description it may be, may, on giving surety, come to court and return; enjoying all necessary freedom for his defence."

I have already observed that the Lutheran is the only religion authorized by law, but that every other is tolerated. The king, in the same manner as all protestant princes, is head of the church in his dominions: his sentence in any matter relative to the church and the exterior mode of worship is conclusive. The authority of the bishops, a restraint upon the clergy, only extends to the conferring holy orders, and keeping the priests to their duty: they have no temporal jurisdiction, nor other rights than such as are necessary for preserving proper discipline and regularity in the church.

The Danes and Norwegians love their king; but the former are better instructed, and of more gentle manners. This is the result of an examination which is practised in the towns of Denmark by persons selected by the magistrate to watch over the education of the children, and the administration of the property of the pupils: they can, of their own authority, dispose of children neglected by their parents, and put them out to employments. The law even allows them to reimburse themselves by execution for the advances which they make for the children; and if the family be indigent, the almshouses are obliged from their funds to reimburse them. The same people are obliged to watch over the property of minors, and exact a just account; and for the better security of the pupils, the law requires of those who dwell in a house, or in the neighbourhood, where a father dies, having orphan minors, to make a declaration as early as possible before a magistrate, under a severe penalty.

With respect to the external commerce of the Danes, Christian IV. was the first of their kings who established in his states an East India company. Christian V. new-modelled it, and gave it a charter, the twenty-eight of November 1670. It fell to the ground under Frederick IV., who used great efforts towards supporting it. Christian VI., in 1732, set it on foot again: this is the epoch of the present establishment.

The

The insurance company was formed in 1727; it is divided into shares of a thousand crowns.

The bank, which may be esteemed the spring of the Danish trade, owes its existence to a company, which by this establishment rendered a signal service to the two kingdoms of Denmark and Norway.

The African company was established in 1755, to continue a branch of commerce begun by individuals: its charter, granted for forty years, allows an exclusive right to this trade from the 22° to the 36° of latitude. Hitherto the trade has been carried on chiefly with Saffy, Sallee, and Santa Cruz. The company import wool, copper, wax, and leather; it exports thither linen and woollen cloths, spices and other commodities which Europe furnishes to Africa. The same company exports to the West Indies, that is to say, to the islands of St. Thomas, St. John, and Santa Cruz; it is composed of five hundred shares, each of five hundred crowns.

I have previously noticed the company which carries on exclusively the trade of Iceland. I have a few words to say of the manufactories. Frederic V. neglected nothing to establish them in Denmark and Norway. They manufacture sail-cloth, ordinary linens, cambric, paper, tobacco, stuffs, refined sugar, earthen-ware, porcelain, alum, and soap. At Copenhagen they make lace, gold and silver fringe, all sorts of jewellery, arms, muskets for the army, blankets, and silk stuffs, stained and painted carpets, wove stockings, hats, and velvet. Their industry in tanning of leather promises them success. The gloves of Runder and Odenfu are famous; in short, manufactures increase and mend daily: whatever foreign merchandize can be dispensed with is regularly prohibited.

In Zealand and Norway are cannon and other foundries. This is the roll of the land forces of Denmark, according to the regulation of 1763:

Horse and foot guards	-	-	-	704
Cuirassiers	-	-	-	4380
Dragoons	-	-	-	2920
Hussars	-	-	-	600
Infantry	-	-	-	20,020
Artillery	-	-	-	1158
Engineers	-	-	-	31
Total				29,813

Besides these, in Denmark and in Norway are thirty thousand national guards, among which is a body of skaters of six hundred men, very dangerous enemies; who, by means of a particular kind of skate, get forward over the ice and snow with incredible swiftness.

The king of Denmark in 1763 had twenty-six sail of ships, carrying from forty to ninety guns, and seven or eight frigates. The sailors designed for the royal navy are of two classes. Those who dwell by the sea-side are classed, and their number is about twenty-five thousand. These men serve the king in all extraordinary armaments, and almost always in partial equipments. The second class, which is more intimately united to the royal navy, is composed of four divisions: each division has its chief, and ten companies of each one hundred and eighteen men. The companies are commanded by captains of ships, who have two subaltern officers under them. It is in imitation of this corps that, at the end of the war, sixteen companies of soldier-sailors were formed in France, under the name of the regiment of Dunkirk. This second class of sailors consists



consists of four thousand seven hundred and twenty men. It furnishes complements of men for common occasions, and workmen for the dockyards; a commission was established in 1739, charged with the direction of the building of vessels, it is composed of three captains of ships and three builders. By this wise establishment no vessel is built, the construction of which has not been previously planned, and none are constructed in opposition to the remonstrances of experienced officers, such as have frequently in France been occupied through an entire voyage in endeavouring to remedy the faults of the builder.

There is a company of cadets living at Copenhagen in an edifice erected by Frederic IV. in 1701. This company is the seed-bed of officers, as the Royal Marine Establishment is in France. The director of navigation teaches them that art, and geometry; an officer of artillery gives them lessons in that branch. They have other masters for arithmetic, geography, history, the English and French languages, drawing, dancing, and fencing. The first builder explains to them the construction of a vessel. In order to combine practice with theory, every year a frigate is afforded them, on board of which they successively go through the duties of sailors, pilots, and officers. The marine department is directed by a counsel under the title of *The United College of Admiralty and Commissariat General*. It is composed of three civil officers; the first of which is secretary of state, and chief of the department, and of four admirals.

I forgot to mention that the war department is generally given to a general officer, who, as soon as he obtains this dignity, renounces his command. All memorials respecting the advancement of officers, the administration of justice, and the maintenance of discipline, are addressed to him. He signifies what are the orders of his Majesty. There is a particular department, called the *Commissariat general of War*, composed of six persons, the chief of whom is the minister; its functions, to look to every thing which regards the pay and cloathing of the troops, providing for them, and directing their stations.

I shall terminate this article with an enumeration of the towns, and inhabitants of Denmark and Norway. There are in the kingdom of Denmark sixty-eight towns, twenty-two burghs, five hundred and eighty-three noblemen's estates, sixteen baronies, and fifteen lordships. In Denmark and Skleswick thirty-three thousand two hundred and fifty-nine children were born in 1776, and twenty-nine thousand nine hundred and fifty-nine persons died: from which may be inferred with likelihood, that the population of Denmark is about one million.

There are but eighteen towns in all Norway. In 1766 twenty two thousand three hundred and seventy children were born, twenty thousand and ten persons died; the enumeration of its inhabitants may consequently be estimated at about seven hundred thousand.

On speaking of the roe of the cod, I did but mention the names of Nordland and Finmark, it may be well to say something more of them. Nordland and Finmark are two bailiwicks north of Drontheim, which is but the second commercial town of Norway, although looked upon as the capital. Drontheim was formerly the residence of the kings of Norway; it has an excellent port, and next to Berghen, produces more articles requisite for shipping than any port in the north. The bailiwick of Nordland extends from Nummedal to Finmark; it comprehends the provostship of Heligeland, formerly Halogia; Ramus endeavours to maintain that this country is the Ogygia of Homer, and Ulysses the god Outin: the result in such case would be, that this province must have been inhabited immediately subsequent to the siege of Troy. It furnishes fat articles and fish; good pastures are met with here, and large forests. At the

end of this provostship is a mountain with seven points, very highly elevated, and which are distinguishable twenty leagues from shore. The inhabitants are principally engaged in the fishery, as well as those of Finmark. Finmark is divided into eastern and western. The first part includes the mountain called Nord Kin, ten Danish miles from the North Cape, at the extremity of the main land; it comprehends the isle of Wardoe as well, situated about an English mile from shore: beside a port of this island is the town of Wardhus, which is the most northerly fortrefs in the world. The second part of Finmark, the western, comprizes the isle of Mageroe, in which is the most northern mountain of Europe, called the North Cape. On all these shores, ports, or excellent anchorage, is met with. It seems as if nature took pleasure in forming retreats of greatest security in the most frightful quarters of the universe, and in the most ungenial climes; any vessel, tempest tost, which should be under the necessity of making for the coast, is every where secure of an asylum whatever wind may blow. The reader has to be informed that every fisherman is a pilot, and that they proceed two leagues out to sea to pilot a vessel, however high the wind may be. It is further to be understood, that notwithstanding these coasts have a most tremendous appearance, they are much less dangerous than they seem, on account of all the peril being visible and navigation safe every where except where there are breakers seen. What I have mentioned of the coasts and inhabitants of Nordland and Finmark may be said of the coasts and neighbouring nations, all of whom trade in tallow, butter, oil, fish, and wood; they follow the same mode of living, and are far from being so cowardly as some authors have reported. On the contrary, all these people are brave. Oftentimes they have been seen to wait steadily for the famished bear advancing to seize them: others, without any other weapon than a knife, pursue these animals at the risk of being strangled and torn to pieces, which frequently happens.

Detailed accounts of the Laplanders and Samoiedes are not wanting, but they agree in so few points, that the reader is at a loss what to believe; add to this, they are so much encumbered with childish fables, that I consider it to be obliging the public by undeceiving it on those matters, false or doubtful, which relate to these savages. The particulars I am about to detail were afforded by a learned man, who has made several voyages to Archangel, and who translated for me into Latin, all the observations which he had written in German. Nothing is so important for the natural history of mankind, as to obtain exact acquaintance with these northern nations, in which is still to be traced the original character of man in his primitive state of nature; whence may be calculated the progress of instruction and the value of society.

Many journals of voyages to Russia, and above all, the observations on the Samoiedes, published at Peterburg in 1732, fix the earliest establishment of these people in the neighbourhood of Archangel. On the contrary, it is a fact that they are not to be met with nearer than three hundred wersts, or two hundred and ten miles English from this town; what gave rise to this error was the circumstance of some Samoiedes bringing fish, oil, and merchandize to Archangel for the account of different merchants, who maintain them as well as their rein-deer; this also has induced others to assert, that the fishery for seals and sea-calves upon the coasts of the White Sea, from which oil is extracted, is carried on by Laplanders and Samoiedes inhabiting the shores of that sea. This assertion is devoid of truth. The Russians alone carry on that laborious and dangerous fishery; neither Laplanders or Samoiedes ever inhabited the banks of the White Sea. Their first habitations which are not stationary, are found on the district of Mezene, beyond the rivers of that name. This colony consists of three hundred families, all of which are descended from two different tribes; one of which is called Laghe, and

and the other Wanouta; a distinction minutely observed among them. This colony bears the name of Objondire; another which adjoins it that of Tihijondire, while that in the neighbourhood of Poustozer opposite to the strait of Wagatz, commonly called Gougorkoi, gives itself the name of Guaritzi. This savage nation occupies the extent of more than 30° of longitude, along the northern coasts of the Ocean and Frozen Sea, between 66° and 70° of north latitude, and reckoning from the river Mezene towards the east, beyond the Oby as far as Guenifée. All these Samoiedes, notwithstanding their being dispersed over so great an extent, and divided into different families, have doubtless a common origin; as appears from their physiognomy, their manners, their mode of living, and their language.

On the other side of the White Sea the Laplanders inhabit a wide spread country, from Kandalax to Kola, and from the frontiers of Swedish and Danish Lapland to the straits of the White Sea; they occupy more than a thousand wersts, or seven hundred miles. Nevertheless all this large track of country is peopled by no more than twelve hundred families of Laplanders. I have united in this account the Laplanders and Samoiedes for no other purpose than to designate the exact position of the country, and the districts inhabited by each. I am far from imagining with others, that these two people compose but one nation. The gentleman from whom I hold these particulars, assures me of the contrary; and further he added, that M. Buffon is egregiously mistaken in his Natural History, when he reckons the Laplanders, the Zemblians, the Borandians, the Samoiedes, and all the Tartars of the north to be the same race of people. On this subject he observed to me, that, in speaking of the Zemblians, he spoke of an imaginary nation; it being well known, that the country denominated Nova Zembla never had inhabitants, navigators mistaking for inhabitants of the country the crews of some Russian vessels; particularly as the Russians, who go there to fish for seals, are accustomed to dress in the same manner as the Samoiedes. Another probability in favour of this opinion is, that the Russians who passed the winter there, never once met with the least trace of man, seeing no living creatures except white bears, white foxes, and rein-deer, which fed on moss and fish that the sea threw on shore. As for the Borandians, the name is utterly unknown in the north. I have as well been informed, that the crew of a vessel desirous of wintering there some years after, had entirely perished. The twenty-four men of which it was composed, were found dead, on the spot fixed upon for their winter quarters. For a long time it was imagined that they perished from extreme cold; but it was satisfactorily shewn, that it was owing to the thick and unwholesome fogs, occasioned by the putrefaction of vegetables, and moss on the sea-shore; which poisoned and destroyed them. What confirms this which I am stating, is that a colony from Mezene, composed of twenty persons, who had established their dwelling at a place twenty leagues from the others, suffered extremely from the same fogs. Although none of them died, they were all ill. The terrible pestilence, which in the middle of the fourteenth century depopulated Iceland, was no other visitation than one of these fogs.

Some authors relate that silver has been found in certain places of Nova Zembla. This is not unlikely, since it is current throughout Russia, that in the reign of the empress Ann several rocks were discovered in a desert island, encrusted with the finest silver. Bars of it were sent to Petersburg. Great riches were looked for from this discovery; the rocks were bored, but the interior was not found to contain any of this precious metal; that which had been met with being only a simple crust, possibly as old as the creation.

The Samoiedes are for the most part below the common size, they have a stout, nervous frame, broad shoulders, and short legs, small feet, a short neck, a very large head,

a flat face, little black eyes, a funk nose, wide mouth, and thin lips; their strong black hair hangs over their shoulders, their complexions are olive brown, and their ears very large. They have little or no beard. The physiognomy of the women bears resemblance to that of the men, they however have rather more delicate features, and smaller feet; but as the two sexes dress alike, it is difficult to distinguish them. Both one and the other wear dresses made of rein-deer skins, turned inside out, which bind round and cover their bodies.

As to what relates to the Laplanders, scarcely any resemblance is to be found between them and the Samoiedes, unless it be their dress, which is nearly the same, their wandering life, and their common use of the rein-deer. The Laplanders pretty much resemble the Europeans, and particularly the Fins; they have however the upper jaw-bone rather longer and more high. Their hair is of various colours; and as for what regards the women, there are some among them who would pass for handsome in any nation. The Laplanders further differ from the Samoiedes in their beard, which the former have very thick and bushy. The Laplanders are esteemed to be descendants of the Fins, and the Samoiedes of some Tartar race anciently inhabiting Siberia, which, pressed upon by other hordes, retreated to the extremity of the continent. The Laplanders do not, as is mentioned in different relations, use the javelin, they are even ignorant of the use of it; they have muskets, and buy their powder at Kola. They do not eat their meat and fish raw like the Samoiedes, they do not make flour of pounded fish-bones, this custom is usual among the Fins of Carelia; but the Laplanders make use of the fine pellicle which is under the bark of the fir-tree; they lay in a stock of it in the month of May, dry it, reduce it to dust, and mix it with flour of which they make bread; they pretend it a sovereign remedy against the scurvy. They do not make fish-oil their beverage. It is not true that polygamy is allowed among them, any more than the reputed practice of marrying without regard to affinity. They do not offer their wives and children to strangers; this charge is void of proof. Much has been said of the witchcraft of the Laplanders, but all the tales on that subject are much exaggerated. Although the greater part of them profess Christianity, they have nothing of it among them but the name. They find great difficulty in changing their manners, and quitting their idols. Neither the Laplanders nor the Samoiedes are so short as they have been reputed by historians, who have been desirous of making them pass for pygmies; however, they are very little more than from four feet three to four feet five in height. The life of the Laplanders is an image of the life of our first parents. They live without houses, without farms, without sowing, without planting, without sewing, or making cloth, &c. Providence has afforded them an animal which requires little or no care, and this satisfies all their wants. The rein-deer is the least expensive of all domestic animals, and at the same time the most useful; it feeds and takes care of itself; in summer it lives on moss, leaves, and herbage, which it meets with on the mountains; in winter it scratches up the snow with its feet to get to the moss, which instinct points out to it. When a rein-deer has been running all day, his master does no more than let him loose, or tie it to a tree, and carry it a couple of handfuls of moss: it has a strong resemblance to the stag, but differs in its horns projecting forward. This animal serves the Laplander instead of fields, meadows, horses, and cows. Its flesh and its milk form his principal food; its skin he uses for clothing in winter, and in summer he sells it, or exchanges it for a tent, which serves him to dwell in. Of its hair thread is made, its bones and horns make furniture and tools, its skin provides him with a bed, and to sum up the whole, its milk makes him excellent cheese. Thus does the rein-deer make the fortune of a Laplander. Several of them keep as many as a thousand; and know them all by their names. When they travel, or are desirous of transporting their effects, they

they use a sledge in form of a boat; the water cannot penetrate it, and the traveller in it is sheltered from cold. These sledges are drawn by the rein-deer with so much swiftness, that they seem almost to fly over the mountains and valleys, and through the reefs: they are used only upon ice and snow. The Laplanders, as well as the Fins, make use of a singular kind of skate peculiar to themselves; it is made of planks six or seven feet long, and nearly a foot broad: this plank is pointed, and turned up before. A similar plank is fastened to each foot, and taking a long stick, the bottom of which has a flat circle attached to it to prevent its sinking into the snow, they skate with such velocity as to overtake bears and wolves. This is the whole which in detail can be said of these northern people. I return now to Berghen.

## FOURTH PART.

*Containing the Course from Berghen to the Eastern Coast of Iceland; a Description of the Ports in those Parts; of the Islands of Ferro, Shetland, and the Orcades; and Return to France.*

AFTER taking in refreshments at Berghen for my ship's company, and completing the necessary repairs to my frigate for fitting her for sea, I made ready to sail. The wind was adverse for several days; I was desirous of a south wind, in order to get out by one of the passes north of Berghen, and continue my course direct towards the coasts of Iceland; but the wind did not come round to the south before the tenth of August, at three in the morning, and at four o'clock we weighed anchor, the wind weak, and the sky overcast, with small rain. We hoisted all our sails, and ran six leagues on the N. N. W. to N. W. tacks, keeping the land to leeward, that is to say, the south, on account of the winds from shore. After running this distance we perceived an opening in the northern bank of the river; we made for it immediately, in order to keep the cape at N. E., and pass through it. We coasted along a small isle to leeward, within pistol-shot, in order to avoid a rock under water, which was still nearer to us, to judge from the eddy, and which the pilot pointed out. After passing this rock we steered N., then N. quarter N. W., afterwards N. N. W., in order to double several small islands or rocks which we left to leeward. After doubling all these islands, we found ourselves in a little road, close as a basin; the entrance of which, and the way of getting out, was invisible. A squadron of four or five vessels might anchor here in seven fathoms water, sandy bottom; vessels have wintered here. On all sides iron rings are seen, for the purpose of mooring. We went out of this basin through a gullet or narrow strait, wherein two vessels could scarcely pass abreast, and found ourselves afterwards in a bay of more than twelve leagues in circumference, and which had no apparent opening but to the N. W., three leagues before us. I then shipped my oared cutter, and carried all the sail I could, steering N. W., in order to get out of the bay by the opening we saw. At noon we were between the two islands, which form this passage, which is called the passage of Hennesgat, or Hennesfiord; hence the Norwegian pilots returned, and I steered W. N. W. in full sail, in order to get rid of the land. It may be observed, that this way out of the river of Berghen is long, but it is not difficult. It is ten French leagues from Berghen to this pass, called Hennesgat; but in these ten leagues there is no more than half a league of difficult navigation. Two anchorages are to be met with for large vessels, and several for small, between Berghen and the entrance of the little basin, of which I have before made mention, where ships may ride in safety, whether the wind be contrary, or too violent, to go to sea. This road-head is even more happily situated, for vessels coming from sea, which find themselves upon the coast in bad weather; for they



they find a safe asylum—*statio bene tuta carinis*. This way out from Berghen by the north, although longer, is a much finer one than that by the south, called the Passage of Cruxfiord, which is only six leagues from Berghen. The course by Cruxfiord is shorter, but it is narrower also, and the anchorages are not so good; in other respects the wind, and the destination of the ship, must decide which to prefer, for on the side of the passages of Hennegat, or Holmfiord, more to the north, the ground or rocks which form the beds of the water are very low; there is no good land-mark, and the continental objects are very distant. No danger however can occur from making land towards the north, particularly in fine weather: pilots are met with every where; there are even four in the two islands which form the passage of Hennegat. These pilots, who follow the trade of fishermen as well, are always at sea. When the weather allows, as soon as they descry a ship, they hoist all sail, or row with all their might to reach her. This passage is, according to my estimate, in lat.  $60^{\circ} 40'$ .

I before observed, that on leaving the pass I steered W. N. W. to leave the land, and enable myself to take advantage of whatever wind might blow. We had had a S. and S. S. W. wind, and it might possibly get round to W. I run fifteen leagues, steering W. N. W. and N. W. quarter N. The eleventh I was in lat.  $61^{\circ} 20'$ , long.  $1^{\circ} 34'$  W. of Paris. I ought not to forget to remark, that being by estimation twelve leagues from Norway, I founded but found no bottom; but after proceeding eight or ten leagues farther I found one hundred fathoms water, with a muddy grey sand, which confirms the observation before made, that the more one nears the coast of Norway the greater the depth of water, the bottom becoming muddy; and that the more one approaches the coast of Shetland, the more gravelly the bottom, mixed with black stones; and that in mid-channel there is seventy fathoms water, with a fine sandy bottom.

The twelfth, thirteenth, fourteenth, and fifteenth, little wind, continually changing all round the compass. According to the variations I directed my course, and the fifteenth, at noon, I found the lat.  $65^{\circ} 20'$ , long.  $10^{\circ} 5'$  from Paris. During the whole of these four days the sky was overcast, but with a fine sea. The twelfth, we observed  $17^{\circ}$  of variation, and we saw a prodigious bank of little red fish, which had the appearance of a sand-bank, over which the sea broke for an extent of two leagues. Similar heaps of fish are frequently met with in these seas, which may cause anxiety to navigators at the first sight, the more so from their attracting prodigious flocks of sea-fowls, as is noticeable on sand banks. These seas are also well peopled with whalés. On the fifteenth, in the morning, I saw a bird which merits description: it was as large as a goose, with a white body; but its head, its tail, its neck, and the end of its wings, were of a jet black.

The sixteenth, the wind blew hard from the N. E., with a heavy sea; I made a tack under main and fore-sail, conceiving myself to be E. quarter S. E. of the point of Langerness, and eighteen leagues distant. I kept on the N. W. and N. N. W. tack, and made the point of Langerness at six o'clock in the evening, bearing N. N. W., six leagues distant. As I was threatened with bad weather I made another tack, lest the wind should get more to the E. I saw many fishing vessels luffing up to shore. By night the wind blew high, with a dreadful sea.

The eighteenth, the wind somewhat subsided, and the sea became calm; this is what always happens in these climates: the sea swelling and subsiding continually with the wind. I steered N. W. to make the land. I spoke to several Dutch vessels, and to one Dunkirker, who informed me there was nothing new in the fleet. At six o'clock in the evening, the weather serene and clear. I made the point of land S. of Burgerfiord, at S. E. computedly distant eight leagues. It is to be remarked, that although the land-

marks



marks of Iceland be very high, you must be near to them to see them, owing to their summits being covered with snow, and lost in fogs frequently, as I have (I believe) before observed. I founded on taking the bearing before described, and met with one hundred and five fathoms water, with a muddy bottom. I observed with care the same day the variation of the needle, which I found to be  $29^{\circ}$ . I was then within sight of land, in  $67^{\circ}$  degrees of latitude.

The nineteenth, twentieth, and twenty-first, the wind variable, sometimes weak, at others violent. I bore under various gales to observe the bearings of the land, and look for the French fishing vessels, which usually are widely dispersed.

The twenty-second, at three o'clock in the morning, the wind E., the sky serene; I bore to the north as far as  $69^{\circ}$  of latitude. I then applied to myself the lines of Virgil:

Hic vertex nobis semper sublimis; at illum  
Sub pedibus stix atra vidat, manesque profundis  
Maximus hic flexu sinuoso dubitur anguis  
Circum, perque duas in morem fluminis arctos  
Arctos, oceani metuentes equore tingi.

Lib. I. Georg.

The fog thickening, and the wind changing to the south, I made a tack to S. S. W., for fear of being surrounded by the ice, owing to the fog and currents. Towards ten at night the wind became violent, nevertheless I carried the two lower sails. In the night the tack and false tack of the main-sail gave way, the small stay-sail was carried away; at the same time a surge struck the prow violently, and knocked off one of the bumpkins.

The twenty-third, twenty-fourth, and twenty-fifth, it blew N. and N. E. a gentle gale, with a fine sea, but continually a thick fog. I steered S. under easy sail, and founding every two hours. This precaution was necessary, for as we had foggy weather for several days, and the Dutch charts notice that the currents run west at the north of Langernefs, I might very easily have encountered the shore; but after founding from time to time, I found I had nothing to fear in steering to the south, as there are forty fathoms water four leagues from shore to the north of Langernefs.

The twenty-sixth we had a fresh breeze from the N. W., and fine weather; I observed and found the latitude  $65^{\circ} 57'$ . In the evening I spoke with several French and Dutch fishermen, and saw two corvettes from Dunkirk, which were leaving the fishery and returning to France.

The twenty-seventh, twenty-eighth, and twenty-ninth, the wind changeable, rounding the compass, the heavens overclouded, and fog at intervals. As all the fishing vessels are accustomed to leave the fishery between the twenty-fifth and thirtieth of August, I made ready for my return as well to Brest, the more willingly from the continual reign of foggy weather, and the incessant bad weather, which put it out of my power to be of any service. These latter days were occupied in my seeking the island Enkhuysen. I got into its latitude, and bore on different tacks, E. and W., in order to fall in with it, but in vain. In the night of the twenty-eight we were under some uneasiness: it was very dark, and perfectly calm: the officer on watch came to wake and tell me that they heard an unusual noise. I immediately went upon deck, and effectively heard sounds like those made by the sea on breaking over rocks. I immediately hove the lead, and payed out one hundred fathoms without finding a bottom. Nevertheless the noise continued about a quarter of an hour, after which we heard no more of it. I imagine the noise to have been occasioned by a swarm of fish about the frigate; and consider that there is room for believing that Enkeuysen island is no longer in existence, since of five hundred.

hundred fishing vessels which annually resort to the fishery, not any for these thirty years past have fallen in with it. This island has perhaps been swallowed up by some similar revolution, to that of the Goubermans; or possibly owing to the fog or bad weather, an ice-bank may originally have been mistaken for an island.

I promised to speak of the ports situated on the eastern side of Iceland, as I am on the point of leaving that station, it may not be an improper place to introduce to the reader, the information on that head, I have been enabled to obtain. I shall begin with the first anchorage south of Langernefs, and successively descend to the lower part of the coast. Langernefs is a very long tongue of land, and very even faced; it may be discerned six or eight leagues out at sea. It is situated exactly under the polar circle. South of it is a place where any vessel may anchor in ten or fifteen fathoms, sandy bottom; sheltered to the north, and on the west. On coming from the east to this anchorage, whether to take shelter from bad weather, or to take in water, a ship must keep close to shore; it is very safe, and may be coasted securely at musquet-shot distance. The first object distinguished, is a mast or flag-staff, on three or four houses or cabins. She may anchor opposite these, but it is better to proceed higher up, and leaving these houses on the starboard quarter, proceed till other houses are seen on a hillock fronting the sea, it is here she should make ready to anchor. Fishing vessels generally anchor a quarter of a league from shore, opposite these second houses; but a vessel of war will lay very well half a league from shore; when the wind is northerly or westerly, a vessel is safe at this anchorage; but if there be appearance of a south or east wind, the must set sail.

Vapenfiord is a good bay for fishing vessels of all dimensions; the anchorage is opposite some huts in fifteen to eighteen fathoms water, bottom of muddy sand; but as there are two rocks in the middle of the bay, large vessels which cannot tack quickly, should not enter unless with a favorable wind.

Zand-boek is a road where a vessel is sheltered from all winds from towards the south, anchoring on the south side opposite the Icelanders' huts. There are rocks in the north part of the bay. Between these two ports, there is a small and very safe island called Bourhick.

Burgerfiord is a good road for small frigates and corvettes. When eight leagues from shore or thereabouts, you perceive a mountain which has the appearance of the embrasure of a cannon, and which serves as a landmark for this part of the coast; being placed between the two bays I have just mentioned.

Lommer-fiord is a very good port for frigates; they must anchor to starboard on entering, at the foot of some fishermen's huts, in ten fathoms water, a cable's length from shore. Behind this bay, there is also a mountain, which at a distance resembles a crown.

Zuider-fiord, a small road for fishing-vessels, or very small corvettes.

Meuve-fiord, a small road open to the east wind, which blows full upon it.

Ruider-klip, without dispute the best haven on all the coast of Iceland. It is indeed a road, it is exactly closed, and fifty vessels of war might anchor in it, with ease in perfect safety. It may be entered with any wind from the eastward, a vessel may anchor any where in the bay in twenty-five to thirty fathoms water, muddy bottom; but the best anchorage is at the bottom of the bay, on the north side, after passing or doubling a point of gravel, which looks red at a distance; and which advancing into the bay, forms a creek in which there is excellent anchorage. There is fifteen to eighteen fathoms water with sandy bottom. A ship may moor across, sending a towing rope with a small anchor ashore, which care must be taken in sinking into the ground or otherwise securing.

Kolhom is a bay which has good anchorage, but the entrance is difficult; you have to pass to the south of an island called Schorres, which is before the bay, because in the north part there is a reef which extends very far, and renders the passage to the north of this island almost impracticable.

Papei-fiord is an open road to which the island Papei, which lays at the entrance, has given name.

Preister-bay, and Ingelse-bay, are two other roads; this last is so denominated from its being much frequented by the English: on the parallel of these two bays, six or eight leagues out at sea, there is a large flat rock called Walfboc, looking like the back of a whale. As fishermen have informed me that there are dreadful currents, and terrible eddies between this rock and the land; I am given to think there may be a chain under water, extending from this rock to the shore; and that there would be danger in passing between: notwithstanding fishing vessels have frequently passed. May it not also be conceived that Enkeuyfen, which is placed under the same parallel, is no other than the island or rock Walfboc, seen through a fog by fishermen who could not distinguish the land, and who were ignorant of the distance they were away from it. This is the more probable in so much as the greater part of the masters can neither read nor write, and are not qualified to make a good observation.

The islands of Ferro are situated in the North Sea, between  $61^{\circ}$  and  $63^{\circ}$  of latitude, and between  $8^{\circ}$  and  $10^{\circ}$  of longitude west of Paris. The exact time when these islands were discovered is not known, but it is known that under Harold Haorfager king of Norway, they were inhabited and frequented by foreigners. Towards the eleventh century the christian religion was preached here. Christian III. having introduced the reformation into his states, governed the isles of Ferro by a provost, who depends on the bishop of Zealand, and has seven priests under his direction, who do duty in forty churches. These islands are under the bailiwick of Iceland. They have besides a provincial judge, a seneschal, two subaltern magistrates, and a receiver general for the king's lands, who is as well the director of the commerce of these islands with Copenhagen. The trade is carried on for the king's account, by the chamber of finances. These islands are twenty-five in number, seventeen of which are inhabited and cultivated. They are divided into six parishes: 1. Norderoe, which comprizes the following isles and churches. Videroe, called on the Neptune Vidro. Fulgloe, or Fuloe, two Danish miles in circumference. Suinoe, of the same size. Bordoe, which has a good port in the N. W. Canoe, three miles in circumference; and Calloe or Kalloe, of the same extent. 2. Ostroe, eighteen miles in circumference; it has seven churches, and two ports, called Fugle-fiord, and Kons gaven: this last port is in the gulph of Skaale. 3. Stromoe, this island is twenty miles in circumference. It is divided into two parts; the northern, which comprehends the principal church of Kolde-fiord, and the ports of Wertmanhan and Halderfvig: and the southern, which comprizes the town of Thorshan, which has a commodious port defended by a redoubt. It is the principal place of all the islands, and the only one where there is a market; the seneschal, and the director of trade, reside there. There is generally a hundred men in garrison. King Christian III. established a college here, which was perfected by Christian IV. M. Thurot came in here to rest in the last war, commander of the privateer called the Marshal Bellisle, being entirely dismasted for the third time. 4. Waagoe, this island is six miles in circumference. Its principal church is near the port of Midvaag. This island has besides another port called Sorvaag, which as well as the former is in the south part of the island. Waagoe is that island, which on the Neptune is marked Wage. 5. Sandoe, this island is eight miles in circumference. There

is a frightful current south of this island near the islets, or rocks called *Dassnipen* and *Dassfiets*. South of the island *Sandoe*, are two small islands called *Skuoë* and *Stoeredimen*. This last, which is a mile in circumference, is a round rock so rugged as to be inaccessible. South of this is *Lutteldimen*, where as often as white sheep are put, they turn black at the end of three months. 6. *Suderoë*, this island is about twenty miles in circumference. Here is the port of *Lobroë*, at the bottom of the small gulph of *Vaago-fiord*. This port is one of the safest and most commodious in the island. There is a very violent and dangerous current at the south of this island, near to *Sombøe*, and round a rock called the *Monk*, which is a league and a half from shore; and which must not be neared too closely, for I have seen breakers, which extended more than a quarter of a league. 'Tis said there is a mountain called *Famogen*, in the island *Suderoë*, on which is a lake that ebbs and flows at the same time as the sea at *Lobroë*. It is high water at the *Ferro* islands, at new and full moon at twelve o'clock. These islands are subject to fogs, which cause colds, scurvy, and other maladies, resulting from damp. They are nothing but rocks covered with a little earth, fertile enough, however to render twenty for one. Their only crop is barley. Flocks of sheep form the riches of the inhabitants, who are reckoned at twenty thousand souls. The whole trade of these islands consists in tallow, skins, salted mutton, feathers, ederdow, stockings, and woollen caps, and shirts. These islands are pretty well set down on the *Neptune*, as well as on the chart of *M. Bellin*. The rock called the *Monk*, which is south of these islands, and which from a distance appears like a building, is in longitude  $9^{\circ} 5'$  west of *Paris*. Upon taking observations on a line running E. and W. through the rock, I found it to lay in  $61^{\circ} 17'$ . I compute the variation to the south of the islands of *Ferro*, to have been  $19^{\circ}$ .

The *Orcades* are a heap of islands lying north of Scotland, from which they are separated only by the strait of *Pentland*, which is two leagues and a half broad, and four leagues long; there are sixty-seven of them, of which twenty-eight are inhabited. These islands were very little known to the ancients, for histories do not agree upon their number. *Pliny* and *Pompenius Mela*, do not reckon more than forty. They doubtless considered some of these islands called *Holms*, by the inhabitants, and which are very small as rocks, which however yield excellent pasture. These islands were formerly governed by separate kings, but the Scotch dethroned them, and became masters; the *Danes*, or rather the *Norwegians*, afterwards seized upon them, but in 1472, the Scotch re-took them. They are now a province of England; they belong to *Lord Merton*: their contribution to the state is no more annually than five hundred pounds sterling. The climate is healthy, but cold and damp. Their crops are chiefly barley, which thrives abundantly. The inhabitants have plenty of cattle, and are much given to fishing; so that fish and salt beef form the principal trade of the islands. Nevertheless they furnish tallow, leather, salt, rabbit-skins, barley, and woollen stuffs. The coasts of these islands possess excellent bays and creeks, but they must be known to be entered without danger, for the tides are strong, and the currents violent. The master of a *Dunkirker* related to me a striking anecdote of the currents of the *Orcades*; he told me that being becalmed in a privateer belonging to *Dunkirk*, nearly two leagues from shore on the northern side, the privateer was drawn by the current into the midst of the islands; upon this he cast anchor, but his cable was cut in an instant, and the vessel was on the brink of being lost; when some fishermen came on board, who by the help of a light breeze, conducted her out to the west of the islands, after having passed through much danger, and by dreadful eddies. The mariner from whom I gathered this, confessed to me that they were mortally afraid that their pilots, with whose nation they were at war,

were

were about to conduct them into some port, where they should be made prisoners ; and that they were much astonished at getting rid of the islands so cheaply ; it costing them no more than five gallons of brandy, which was the price agreed upon. This privateer was ignorant, without doubt, that there is a resolute conduct to be held on such an occasion, the pilot being a foreigner ; it is to promise a handsome reward for putting the vessel out of danger, and to make him responsible with his life for any accident which may befall the vessel.

I am unable to describe all the ports and anchorages of the Orcades. Not having been within reach of examining them, I could but take soundings and views ; I shall therefore only observe in this place, that in the north of the Orcades where I founded, there are fifty fathoms water, rocky bottom, at scarcely two leagues from the shore ; and that I was informed there were thirty fathoms water, a quarter of a league from land. Therefore when less than fifty fathoms water are met with, it is high time to tack, in order to avoid the currents. I shall observe, that having taken the latitude with an excellent sextant, pretty close to land for better security of exactness in my bearings and distance, I found these islands lay six minutes more south, than they are marked in the Neptune. This is the whole of the observations I made respecting these islands : what I was enabled to gather beyond from different navigators, agrees pretty well with what Mr. Bellin says of them in his *Essai sur les Isles Britanniques*, and with a chart on a large scale of these islands and those of Shetland, which was given me at Berghen, by the captain of a merchant vessel, who every year takes a trip to the Orcades, and to Shetland. I have thought proper to state here, notes of what Mr. Bellin says of these islands, after making the necessary corrections, and adding whatever is useful.

Pomona or Pomönia, is the largest and principal of all the islands. The lands are very high on the western side. It is in this island the town of Kirkwall is situated, the capital of the Orcades, and residence of a bishop. This town is on the north side, it has a port and roadstead, but the most considerable ports of the island are Schapa, opposite to Kirkwall, Cairston, Carston, and Durfound.

The port of Cairston is on the S. W. of Pomona. It is a very safe port, and fit for the navigation of the western side, there are several passages to it between the islands. The passage called Hamfound, which is south of Pomona, is very good for vessels coming from the east. This passage is navigated by leaving the point of Rofs-nefs to starboard, which must not be neared too close, as a reef runs out from it, although to no great distance. This point of Rofs-nefs is south of Pomona. Afterwards the little island of Lamholm is left to larboard, whence you coast along Pomona ; and if with contrary winds, there is anchorage in a creek to the south of Pomona in six fathoms water, called Schappa-roads. If the weather be favourable, you coast along Pomona ; on the way a little island is passed, which the country people call Burre Botter ; it is safe, and may be passed, according to the wind, either on the larboard or starboard quarter. Carra is then passed to the northward, and afterwards a small island, both very safe, and at equal distance between Carra and Pomona ; whence steering N. W. quarter W. you arrive at the port of Cairston, where there is anchorage in the road in seven fathoms water ; but if desirous of proceeding higher up and getting in shore, you may anchor in four fathoms, perfectly sheltered from all winds, and without any currents or tides to molest you.

Cairston is a small town, at the bottom of the port ; provisions may be obtained there. It is most easy to approach Cairston from the west, and the road is much the shortest ; but care must be taken not to near the southern point of Pomona, as there



is a ridge of rocks about it. There is also a good passage to it between the islands of Soult-Ronalza, and Burra, but it is very narrow. It is dangerous to attempt it, unless with a sure and favourable wind. South of Pomona the tide runs S. E. at new and full, and the difference of high and low water, is twelve feet.

The port of Durfound is on the N. E. of Pomona, within Mull-head, the most eastern point, and a league from the W. of the point. Mull-head is a very high and distinguishable land; it is besides healthy and rugged. There are two rocks to the E., and two others to the N. N. W., but they are very nigh the shore. The entrance of the port of Durfound is nearly a mile wide; the middle must be taken on account of some rocks under water close to land, particularly towards the point to larboard of the entrance. After doubling this point you enter the port, where there is anchorage every where; but to be best sheltered vessels lay west of the point of Nestin, which is that of the starboard on entering, where you anchor in five fathoms water. Small vessels go to the south of Durfound, into a creek called Market-bay, where they anchor in three fathoms. Care must be taken respecting the height of tide on entering this creek; for in the middle of it there is a bank on which there is no more than five feet depth at low water. Neap and spring-tides rise twelve feet at Durfound, ordinary tides but eight feet.

The port of Kirkwall is north of Pomona; to get at it by the east you must take the passage of Stronfairsith, south of the island Stronfa, and north of Mull-head. You must near the cape, pass before Durfound, between the north of Pomona and the south of the isle of Schapinsla, leaving the island called Elgarholm to starboard, and that of Thieveholm to larboard. As soon as you have passed the latter island steer S. S. W., to avoid a rock a mile to the N. W. of Thieveholm, on which there is but six feet at low water. Afterwards steer S. quarter S. W., to enter the road of Kirkwall, where you anchor in six or eight fathoms water. You may get nearer the town at the bottom of the bay; there is better shelter, but it is not so eligible a station to sail from. There is excellent anchorage a league and a half to the west of Kirkwall, called Monoo's Bay: but as there are rocks to starboard and larboard on entering, the middle of the channel must be kept: it would even be a prudent precaution to take a practised pilot of the place on board; they are always to be found.

The island Roufa is north of Pomona; it is of small extent, but the lands are very high. Between Roufa and Pomona the currents are very violent.

East of Roufa is the anchorage called Wire-sound: to enter it, coming from the east, you must pass through Stronfairsith; but instead of keeping to the south of Schapinsla, you must keep to the north, having the islands Warms and Grain to starboard, after which you steer W. S. W., to have the island of Egilsha, and those of Wire and Roufa, to larboard: it is between Roufa and Egilsha that the anchorage of Wire-sound is in six or seven fathoms water. The entrance of this anchorage is without danger; all that is necessary is to avoid certain rocks which extend a mile from shore to the south of Egilsha: to clear them it is requisite to keep half a league from the point, and to keep close to the isle of Wire, which has given name to the Sound. To anchor well in Wire-sound, you must keep St. Agnes church in the isle of Egilsha at N. E. and by E. The tide does not run strong in this road, which is greatly frequented by fishermen, who resort to Iceland. You may get out of Wire-sound by a small passage north of the anchorage, between the island of Roufa and the islet of Stocknefs. In this passage there are four fathoms water, but it is very narrow. On leaving this pass you enter Westra-fairsith, or the strait of Westra: the currents are very violent, particularly at high tides. On going through the canal, attention must be paid to keeping close to Roufa, because towards the middle of it, S. W. of Westra, there are very dangerous rocks under water. When desirous of leaving Wire-sound towards the west, keeping the isles of Wire and



Pomona to larboard, care must be taken to keep in with Roufa; and when an island is perceived, called by the natives Inhalla, you must steer to come up to it on the south, and leave it to starboard, on account of there being no passage north of the island: it requires a good deal of wind to stem the current in this passage. You may also reach Wire-sound coming from the east by the passage of Sanda-sound. This passage is between the islands of Sanda and Stronfa, leaving Sanda and Eda to starboard, and Strenfa and Schapinsla to larboard.

After describing the passages and anchoring-places which are in the interior of the Orcades, I shall make mention of what concerns the exterior, which is not less important to vessels which may be driven upon the coasts. I shall begin by the southern part, or strait of Pentland, which is, as I believe I mentioned, between Scotland and the Orcades. On coming from the east to make this passage, an island, which is at the entrance, must be kept at a mile's distance; it is the same thing whether a-head of it north or south. After passing this island it is requisite to steer through mid-channel, and rather keep close to the Orcades than the Scotch coast, on account of many rocks under water on the Scotch side; but after reaching the south side of the isle of Hoy, an island in the middle of the strait is to be kept at W. quarter S. W. When at no greater distance than a league and a half from this island, nothing remains to be apprehended from the Scotch side: it is the same whether this island be passed on the north or south side, there being twenty-five fathoms water on both sides. When this island, called Stroma, is passed by, the channel opens, and the currents are less forcible. Stroma must not be coasted too near, as it is surrounded with rocks. N. N. E. of Stroma, in the isle of Hoy, there is a creek with anchorage in four fathoms water. On the east side of the Orcades the shores are tolerably safe; almost every where there is thirty fathoms water at half a league from the shore. On luffing near her shores, one may prolong a tack without apprehension when the wind is strong; but when there is a chance of a calm a greater distance must be kept, for fear of being carried away by the currents. On the eastern side of the Orcades, the point of Sanda is the only dangerous one; nevertheless the rocks from this point advance no more than half a league to sea towards the N. E. North of this point there is a small island, which is only safe on the south side; there a vessel may anchor to take shelter from a north wind. This island is called North Ronaldsa. North of the isle of Sanda there are two rocks under water near to shore; but two leagues from the north point, and N. quarter N. W. of it there is a dangerous rock above low water.

Any vessel may anchor north of the isle of Edda, south of a small and perfectly safe island, called Kale of Edda. At the north point of Westra there are rocks a quarter of a league from shore; but the south part of this point affords a creek, open to the east, where a frigate may anchor under shelter from the W. or N. W. A league N. E. of this anchorage is the island of Papa Westra, surrounded by rocks on the west, north, and east: they extend more than a quarter of a league on the eastern side. The western shores of the Orcades are for the most part very safe: they may be coasted as close as you please; but care must be taken of the currents which run through the straits. I observed in 1768 on these coasts  $20^{\circ} 40'$  of variation in the needle. I must not forget to notice that there are rocks, about ten leagues west of the Orcades, about lat.  $59^{\circ} 2'$  or  $3'$ : there is one above water; they are called the Stacks. A league north of these are others, three fathoms under water. It is high water at the Orcades at full and new moon at forty-five minutes past two.

Between the Orcades and Shetland there is a small island, called Fair-isle. As this island is in the middle of a much frequented passage, called the Fun, I paid particular attention

tention to it: Fair-ile is placed on the chart of M. Bellin, engraved in 1757, in lat.  $59^{\circ} 30'$ . According to my observations it is  $3'$  more southerly. This island is pretty high, it may be seen ten leagues off in fine weather; it is safe, particularly towards the south and east. On the north and west side there are some rocks, but they are near the shore. On my second voyage I coasted this island, a short league from shore, on its south side, and remarked a beautiful verdant plain and several houses, the latter of which were distinguished by their whiteness. It appeared to me that it is in this spot, at the foot of the hill, that the anchorage is as marked in the Dutch charts; for the coast goes shelving in this place, so that a vessel must necessarily be sheltered from all winds from the N. W. round to the N. E. Fair-ile may be about six leagues round. The houses which I saw on this island announce its being inhabited; and sea-faring men have assured me that finding themselves in fine weather within a league of shore, the inhabitants had come off in boats to the privateer, on board which they were to sell them eggs and fowls, and offering them sheep very cheap. We know besides that Fair-ile is fertile in barley, and in good pastures. According to my observations, the variation at Fair-ile was  $19^{\circ}$  and its long. west of Paris  $3^{\circ} 29'$ .

North of Fair-ile are situated the Shetland isles, which are but seven or eight leagues distant. These are very lofty; they are variously laid down in the Dutch, French, and English charts, so much so as to agree in no shape one with the other. Many days are required to be passed upon the coasts in examining them, in taking their bearings, and in making observations of latitude and longitude, in order to appreciate the defects of their different plans, and make corrections of the islands. I was not able to effect these purposes, having a distinct mission to attend to; but from such remarks as I was enabled to make, and the conversations I have had with different navigators, whose accounts I have compared with the notes of M. Bellin, and those of Routier the Dutchman, I have been able to give some insight to the navigation of the coasts, and the entry of the different ports. As to the difference in respect of the position and figure of the islands, according to the French Neptune and the Dutch chart, I shall remark that the French chart is more exact in the latitude; but that I give the preference to the Dutch for the representation of the figure, and bearings of the land, of as many as I had the opportunity of seeing. Nevertheless Fulo is very ill placed in the Neptune of 1757, with respect to its latitude. This island is there laid down in  $60^{\circ} 19'$ ; and from three successive observations, made in sight of and very near the land, I found it lay in lat.  $60^{\circ} 3'$ . Fulo island is ten miles west of the Shetland islands; it is very high, we descrying it at sixteen leagues distance. It is the most remarkable and best land-mark of all the Shetland islands: when seen at eight or ten leagues distant, it has the resemblance of a slipper; it is very healthy, and a vessel may boldly pass between it and the other Shetland islands, for in the channel there is more than two leagues to luff up in. On this island I observed the variation of the needle was  $18^{\circ} 30'$ . Eighteen leagues west of Fulo I have met with eighty fathoms water, with bottom of large sand, of a grey colour, with black spots: as you approach the land, the sand is more mixed with gravel and stone; and at four leagues from the island there are seventy fathoms water, bottom gravel and black stones. East of this island are the Shetland islands, on the number of which authors do not agree; but there are only three large ones, the principal of which is called the Mainland. The climate of these islands is similar to that of the Orcaades; the land produces equally well both barley and oats; the pastures are very good. Fishing, herds of cattle, flocks of sheep, and cows, make up the wealth of the inhabitants. These islanders are of Norwegian origin. Their language is a Gothic dialect, partaking of the Danish, and particularly of the English language. They make turf-fires, as there is no

wood grows on any of the islands. They follow the reformed religion. These islands are well peopled; above all, round the coasts, which present several bays, creeks, ports, and anchorages.

Mainland island is seventeen leagues long from N. to S., and five leagues from E. to W. at an average. This island alone includes more ports and anchorages than the islands of Yello, Unst, and all the others together. I shall speak of those only even which are in Mainland, the others not being frequented, nor fit to receive vessels of any burthen, as well that ships of any description absolutely require pilots of the place for steering them. Let us begin with the southern part of Mainland, where there is anchorage for a squadron of ten vessels north of a small island called Pard-isle. The entrance into this road is either by the E. or W. of this island, which is safe; and the anchorage is in twelve to sixteen fathoms water, bottom of large sand. This road is at the extremity of a very high and distinguishable cape, called Swineburger-head. This is the best in this part. Mr. Bellin designates three other anchorages between this cape and cape Fitzul, which is the most western point of the southern lands, but these anchoring places are bad, being exposed to hurricanes of wind, which render the seas dreadful. There is only Quendale-bay which can receive large vessels. It is large and spacious; there is an easy entrance, and an easy way out. On all the western side there is only one road fit to receive vessels of war, it is that which the Dutch call Magny-fiord. Its entrance is three leagues N. of the cape, called Fitzul by the French. On the eastern part are the best ports and anchorages. Four leagues N. of Swineburger-head, towards the E., a little island is seen, called Connix isle, which with the large island, forms an excellent road, called Hamburger-haven; there is eight fathoms water; it may be entered by the N. or by the S.: but the best harbour of the whole of the Shetland Isles is that of Laerwyck, which is four leagues more to the N. than the last. The roads of Laerwyck would contain a whole fleet. Every year about St. John's day, five hundred fishing vessels are seen anchored before the town of Laerwyck. The Dutch, who every year resort to these coasts for the herring fishery, call these roads the Great-bay, or Brassa-sound, on account of the island of Brassa, which forms the harbour and protects it from the east winds. To enter Brassa-sound from the south, Brassa must be left to starboard at a cable's length, and the course be continued up the channel till you come before the town of Leerwick, where there is anchorage in five, ten, or fifteen fathoms, according as you go near to, or keep distant from shore. North of the town are the vestiges of a fort which commanded the roads, and which was destroyed by Mr. Bart. The entrance of the road of Laerwyck is easily known by Nois island, which is also called Hanging-cliff, on account of a remarkable rock which hangs over into the sea, forming a natural vault. This island is east of Brassa, and serves as a landmark for the port of Laerwyck; the fleet enters south of Brassa, and the eddy consequently carries them to the south. The tide is stronger towards the north of the channel, and the passage more difficult. This is the mode of getting out through the passage called North Sound, and these the precautions necessary to be taken. I observed that the flood bore to the north. You steer so as to leave to starboard a small island, called the Holm of Cruetter, at about a mile's distance, on account of the rocks which are under water at half a quarter of a league to the west of the island. When this island is past, and bears E. quarter S. E., there is nothing further to be apprehended from the rocks called Fabarre. You continue your course, keeping mid-channel, until you perceive the channel begin to narrow; then, in order to avoid a bank, which is in the middle of the narrowest part of the channel, and over which there is but twelve feet at low water, you must pass by either on the one or the other side

of this bank: if you near the island of Brassa, you must keep at two cables' distance, but if the western side be kept, you may near the shore to within half a cable, on account of its being very safe; when through this channel the road becomes wide, but soon after it becomes much narrower than before. It is requisite then to steer well and sail by an inlet or rock called Scotland, in preference to coasting of Brassa; because in this part Brassa has rocks under water about it, which extend for a mile from shore. When you have doubled Scotland and the most northern point of Brassa, the passage is very good between the rocks called the Brothers and Green island, which you have to larboard, and the island of Beoster, north of Brassa, which is left to starboard. When the island of Beoster is sailed by, the passage of North sound is gone through, and you are at liberty to take what course may suit.

North of Brassa island, between it and the point of Mainland, called Mull of Enwick, the sea forms a large bay, where are four good anchoring places, called Deals Woe, Laxford-woe, Webster-woe, and Catford-woe. I shall not give a description of the three first, which can only receive merchant vessels or corvettes; but the anchorage of Catford-woe, which is the most northerly of the four, is also the most considerable; it forms three creeks, which afford three good ports, the one is E. S. E., the other W. N. W., and the third N. These ports can receive any vessels of war, and afford shelter from all winds. The anchorage is in from three to fifteen fathoms water, according as you near the land. When from the eastern side of the Shetland islands you are desirous of entering one of these ports, you must steer for the isle of Nofs and the Hanging cliff, afterwards bear N. W. to pass between Green-island, which is left to starboard, and the rocks called the Brothers, which are left to larboard. Or, if the water serve better, you may pass between Green-island to larboard and House Stack and Glatness to starboard. From Swineburger-head to Nones, the flood-tide runs to the north; from Nones to Brassa, and from Brassa to Catford-woe S. S. E. The ebb-tide runs in a contrary direction. On the western side the flood-tide runs south from Swineburger-head to Scalluwa, and the ebb-tide runs north.

I have now to speak of the soundings for making land. I have already observed, that, on approaching these islands, the bottom, which is always large sand, is more mixed with gravel and stones. All round these islands at about four leagues distance, there are seventy-five fathoms water. It must however be observed, that on the eastern side there are three or four pits or wells where there is more than a hundred fathoms water. Four leagues north of the Unst island, the most northern of the Shetland islands, during my second voyage, I took an observation in fine weather, and found that the most northerly highlands of Unst lay in latitude  $60^{\circ} 44'$ . The highlands of Shetland are not very lofty; they may however be discerned ten leagues at sea. Twelve leagues east of these islands I noticed the variation  $18^{\circ} 42'$ . I now take up my journal.

The twenty-ninth of August I was forty leagues from the islands of Ferro. The rock at the north of these islands, called the Bishop, was south of me, distant as described.

The thirtieth, weak winds varying from S. E. to S. W., a fine sea, and continuation of foggy weather. I kept the closest I could, whether the larboard or starboard tack, to make the south, and endeavour to fall in with the island Enkeuyfen. I founded every now and then because I saw eddies or whirlpools made by the tides, but I could find no bottom.

The thirty-first, a south wind rather fresh, a thick fog; I ordered the officer on watch at the beginning of the night to bring to till morning, but if the wind increased to haul

haul it. The wind getting round to the east and blowing hard, the officer of the watch came to inform me, that he had taken in the forefail on account of its blowing hard from the east to E. S. E. with a very high sea. As the wind was favourable for returning to France, as I had not seen any thing of the fishing vessels for some days, as the season for the fishery was far advanced, and the continual fogs did not allow of my rendering any further assistance to the French ships, I steered W. S. W., forefails and topfails set to pass between Iceland and the islands of Ferro, and thence to continue my course for Breff.

The first of September, the wind east very fresh at noon, I took an observation, and found myself in latitude  $60^{\circ} 8'$ , and in longitude by reckoning  $15^{\circ} 58'$  W. of Paris. The middle of the bank of which I spoke in the beginning of my journal bore W. quarter S. W. exactly, twenty-five leagues distant, and the island of Rokol at the S., forty-five leagues distant: the island of Rokol is not marked in any French chart, but I am certain of its existence. I have requested M. Bellin to insert it; its situation is in latitude  $57^{\circ} 50'$ , and longitude  $16^{\circ} 0' W.$  This island is very healthy; it is a sharp rock, which, at four leagues distance, looks like a ship; it has frequently been mistook for one. East of Rokol island, a quarter of a league away from shore, is a rock under water, with breakers. Under nearly the same latitude as Rokol, but much more to the W., is another island. It is Buls Island; it is not either on the French charts, but it exists in latitude  $58^{\circ} 0'$ , longitude  $28^{\circ} W.$  On the night between the first and the second, we saw an Aurora Borealis, which afforded us the most beautiful spectacle that nature can display. From ten in the evening until one in the morning, the heavens were on fire throughout the arctic hemisphere, the night was as brilliant as the day; I read a letter at midnight as easily as I could have done at noon. We first of all saw a luminous cloud in the form of an arch, which occupied half the firmament. From this about eleven o'clock rose columns perpendicular to the horizon, and alternately white and red. The upper part of these columns towards midnight changed into sheaves of a flame colour, from the centre of which arrows of light issued into the air like rockets; at length after midnight, these columns, which were arranged with such admirable symmetry, were confounded all at once in a brilliant chaos of cones, pyramids, radii, sheaves, and globes of fire. This celestial appearance disappeared gradually; but the air was full of light even till day.

Phenomena of this description have been seen in all ages and countries; but what are their origin? Why are they observed towards the north? As every one is allowed to have his own system, I shall hazard a conjecture on the probable cause of the aurora borealis, called so from its luminousness resembling that of dawn, although more commonly known by the name of the northern lights, on account of their being seen in the north. *1mo*, I imagine the matter of the aurora borealis to be the same as that of lightning or electricity. *2do*, That the diurnal motion of the earth occasions a continual flux of this matter towards the poles; which makes these meteors most visible in the neighbouring regions. *3tio*, That a certain density, temper, and particular constitution of air be requisite to cause to approach, heap together, and compress the igneous particles so as by their fermentation to produce those sheaves, rockets, and luminous columns which are peculiar to the aurora borealis. *4to*, That all the rapid movements, the lateral divergencies, the sudden appearance of columns, &c. result from their mutual and alternate attraction and repulsion, a natural property of electric fire, as is proved by the alternate attraction and repulsion of gold leaves and light bodies by electrical globes. *5to*, That if this meteor appear but rarely, it is because the air possesses seldom the requisite density, or is properly constituted to produce it.

The most celebrated philosophers have long maintained an opinion that the element of fire was dispersed throughout existence, and that solid and fluid bodies were abundantly impregnated with igneous particles. I conceive that the æther of Newton, the elementary fire of Boerhaave, and electric fire, are the same substance, whose different effects vary in proportion to the impulse, agitation, direction, strength and quantity of the assembled matter; hence the action of the sun on this substance produces the double advantage of light and heat. Thus the attrition of a globe of glass reunites a certain quantity of it, which managed and directed with art, produces the various phenomena of electricity. Thus the sudden and violent collision of two hard bodies elicits sparks, and the continual friction of two bodies of whatsoever description they may be, excites and originates elementary fire in sufficient quantity to inflame and consume any combustible matter exposed to its action.

When a great quantity of particles of fire is accumulated in condensed clouds which compress and drive them together, the particles of fire then striking the one against the other, inflame, sparkle, kindle into a blaze, and burst with explosion the prison which incloses them. Hence the flash of lightning and the thunder clap; and if the lightning be seen before the thunder be heard, it is because the vibrations which expand from the igneous matter are more rapid of flight than the undulations of the air which bring us the sound.

When clouds have less density; when they pass over space more lightly and more freely; when they contain only a small quantity of the particles of fire, then, should they unite and clash together, they kindle into flame without explosion; they produce that silent lightning, and those falling stars which shine and disappear. When the atmosphere is not too much overspread with clouds, and that they have no more than the density requisite for sustaining and leading on the particles of fire in their sphere of mutual attraction, without keeping them in, without heaping or pressing them, then no explosion succeeds; but the particles of fire inflame in the open air, and according to the different figures, though different consistence of the inflammable matter, and the different refractions of light, those globes, pyramids, radii, sheaves, and columns differently coloured of the aurora borealis are seen. The identity of the essence of lightning and that of electricity, which has latterly been discovered, and whose respective effects are very various, greatly supports the hypothesis, that the light of the sun, of lightning, electric phenomena, common fire, are only different effects of the same cause differently acted upon, disposed, modified and circumstanced. These aurora boreales are greatly useful to the inhabitants of the polar regions; it seems as if nature was desirous by them to make amends for the absence of the sun, and the privation of his beams.

The second of September, having steered S. W. for twenty-four hours, the wind going round from S. E. to N. by degrees, I took the latitude at noon, and found it  $58^{\circ} 2'$ , and longitude  $17^{\circ} 10'$  W. by reckoning. I was too much to the west to make Rokol island, which is distinguishable at no greater distance than four or five leagues. Not seeing this island, I conjectured that my reckoning was good, for had I been ten leagues more to the east, I must have seen it; and if, on the contrary, I had been the same distance more to the west, I should have seen some part of Iceland.

The third, fourth, and fifth, and the sixth, the wind veered backwards and forwards from south to west, blowing very fresh and a strong sea. When it blew from the west I steered south, when from the south, west, in order to take advantage of the W. and S. W. winds. The sixth, at noon, the wind skipped round to the W. N. W. in an instant. Latitude  $51^{\circ} 10'$ , longitude  $16^{\circ} 52'$  W. of Paris. After taking the latitude, I steered S. quarter S. W., in order, before night-fall, to get south of the rocks called



Brazil, which are laid down in the Dutch charts in latitude  $52^{\circ}$ , and in those of M. Bellin in  $51^{\circ}$ . At six o'clock, the wind blowing fresh from the N. W., having passed the latitude of Brazil, I steered S. S. E., keeping rather more to the east as I advanced towards the south.

The seventh at noon I was in latitude  $48^{\circ} 50'$ ; Ushant bearing E.  $4^{\circ}$  S., seventy-eight leagues distant.

The eighth, at eight in the morning, having steered continually E. S. E. from yesterday noon, the wind W. and fresh, I changed my course to S. E. quarter E., on account of the wind veering to S. W., and the possibility of its getting to the S., as well because I had to mistrust the currents of the channel, that is to say, of the flood-tide, which is stronger than the ebb: I founded at four in the morning, and met with one hundred fathoms water, bottom red sand, with pieces of broken shining shells. At noon I was in latitude  $48^{\circ} 21'$ , Ushant bearing E.  $4^{\circ}$  N., twenty-seven leagues distant. I continued steering S. E. quarter E. till half past four, when I founded. I found ninety fathoms water, bottom of sand, not red and shells not so much broken as in the morning. This founding and my reckoning placed me in the direction of W. quarter S. W. of Ushant, eighteen to twenty leagues distant. At seven o'clock the wind became W. the weather milder, the sky clear, I steered north, in order to keep before the ebb-tide, and at ten o'clock S. S. W. to take advantage of the flood. At the opening of the Iroise the tides run S. W. and N. E.

The ninth, at two in the morning I founded, finding the same depth, and same bottom, I steered E. quarter S. E. the wind blowing W. N. W. very fresh, a fine sea, but cloudy weather with some rain, falling at the bounds of the horizon, which the wind was bringing towards us. At noon I fell in with Ushant laying N. E. five leagues distant, there was one hour of flood to come, I hoisted all sail to take advantage of the tide, and anchored in Brest roads at five o'clock.

Thus finished my first voyage, in which I have inserted some observations made on my second voyage; but as I could not include the whole, I have subjoined them in the form of a supplement to the four parts, which have been read before.

## SUPPLEMENT

TO THE FOUR PARTS OF THE RELATION OF A VOYAGE TO THE NORTH SEA.

*Containing Return to Iceland; passing between Birds island; abridged Account of Greenland; Description of the Port of Brandsbo in Norway; Remarks on the Soundings, and Navigation of the Dogger-Bank; Entrance into Ostend; Notes relative to entering the Port and that of Dunkirk; Return to Brest through the Channel.*

AS soon as the frigate La Folle was dismantled, I set off to render an account of my mission to the Duke de Praslin. This minister informed me that I must make ready to repeat the voyage in the spring. I requested of him in preference to a frigate the corvette l'Hindrolle, of sixteen six-pounders, with a complement of one hundred and twenty men; on account of such a vessel being the fittest for the operations which I had planned. I repaired to Brest at the end of April to begin equipping the vessel.

The tenth of May, I was in the roads, and I only waited for a fair wind to set sail. The Duke de Praslin was so obliging as to grant me the two first officers I had on board La Folle, Messrs. Duchatel, and the Chevalier Ferron, two officers full of zeal and genius; M. le Chev. Bernard de Marigny, an officer of distinguished merit, gave proofs

of his attachment to the service in joining us. He had recently commanded a king's ship, and the fatigue of a new voyage full of hardships, had nothing in it to deter him. I had for the fourth officer M. Soyer de Vaucouleur, master of a fire-ship, who had commanded several privateers, a man of the best disposition.

I left Brest the fifteenth of May, 1768, with a weak E. wind; my intention was to pass by St. George's channel, but the wind which came round to the N, blowing very fresh, and continuing several days prevented me: I passed to the west of Ireland, as on my first voyage; I kept however more closely in shore, on account of the banks and high bottoms, which I before noticed.

Nothing interesting occurred before the twenty-seventh, at eight in the evening. We had a fresh gale from the west with a heavy sea; and were steering north, when we perceived before us a tide-bed, covered with sea weed and foam; we were shortly in the midst of it, and the sea, every where else running very high, was here as calm and as even as in a pond; except the surface of the sea's trembling and boiling up the current, bearing us with rapidity to windward. I immediately brought to and founded; we found no bottom, but I am persuaded we were in the neighbourhood of rocks, the more so from our being by reckoning between Rokol and St. Kilda islands: there is anchorage in eighteen fathoms water south east of the largest of the St. Kilda islands, and a passage between that, and the one which lays N. quarter N. E. of it. In case of need a vessel may anchor in this channel in twenty-six fathoms water, sand and stony bottom.

The thirty-first, steering north to make land, cape Heckla bearing by estimation N. W. twenty leagues distant, we encountered a furious gale of wind from the eastward, with a thick fog. As the weather was unseasonable for making land, and as I had a long way to make to the west, I resolved on bearing W. N. W. and N. W. quarter W. before the wind, till the weather should change and the sky appear. My intention being in case the weather should not clear up, to steer under bare poles, and stand to sea till such time, as I should find myself in the longitude of Birds' islands.

The first of June, the wind fell towards night, but the fog continued very thick, which caused me to keep on the same tack, under easy sail.

The second, in the morning the sky being somewhat clear, the wind still E. I steered N. E. quarter N. in order to make land. At noon I found myself in latitude  $63^{\circ} 20'$ , and continued the same course; at length, at two o'clock in the afternoon we made the Birds' islands. That which is nearest shore bore N. E. quarter E., four leagues distant, and another west of the former bore N. W. I continued some time steering N. E. quarter N. for the purpose of getting in shore, at length I bore away at N. quarter N. E., to fall in with the islands, and pass between the first and the second, on the side of the main land. The two islands are full two leagues asunder. I found in this passage tide-beds and eddies, which made a dreadful noise. The direction or course of the tides is N. W. and S. E. North of the two islands between which I failed, I perceived the passage between the main-land and the first island; it appeared to me scarcely a league wide; on account of the currents, it ought not to be attempted except with a strong and leading wind. A little north of these two islands, I saw three others at sea, which appeared to me to bear W. quarter N. W. of the former. All these islands are but sharp and inaccessible rocks. I continued my course N. quarter N. E. to fall in with Mount Jeugel, and afterwards get under Bredervick point, where all the fishermen were assembled.

The fourth, I anchored at Patixford, where I remained some days to give to the French vessels what assistance they needed. I say nothing here of the bearings of the anchorage, or what relates to it having already mentioned it before. After remaining

eight days at Patriford, I. made ready to depart for Berghen in Norway, to take in a month's provisions; but before I leave the western part of Iceland, it will be proper to say something of Greenland, the land most contiguous to Iceland.

Respecting Greenland we have only an imperfect knowledge. Some geographers look upon it to this day as an island, others as a peninsula. This country was discovered by a person of the name of Gunbiorn, and made more particularly known by Eric, surnamed Red-head in 982. The green pastures of the country caused him to call it Greenland. He saw savages there, who doubtless had passed over there from America, but of the origin of which there is nothing certain. The king of Norway being informed of this discovery, caused missionaries to be sent over with a colony. The Greenlanders in 1256, revolted against King Magnus, but this prince assisted by the Danes, reduced them again to subjection in 1261. The black plague which ravaged all the north, interrupted navigation to Greenland, and for two ages the country remained entirely forgot. Martin Frobisher left England in 1576, to attempt to reach Greenland, but the ice did not allow of his landing until 1577. He gave his name to a strait in latitude 63°. In 1585 John Davis went more to the north, and gave his name to a strait which he discovered. Christian IV. in 1605, sent three vessels thither, which established a trade with the Greenlanders, five of whom were brought to Copenhagen, but died of grief at being separated from their country; the next year five ships were dispatched, and in 1616 this prince dispatched Captain Munck with two vessels for Hudson's Bay, in order to discover a north-west passage. It is Captain Munck who gave the name of Farewell to the cape, which forms the south part of Greenland. In 1636 some merchants of Copenhagen sent two vessels to Davis's straits, who trafficked with the Greenlanders and brought back a large quantity of gold dust. It is not known for what reason this trade was discontinued by the Danes to 1718, when a clergyman full of zeal, obtained an order from the king to go over to Greenland with all his family. His name was Egede, and all the Greenlanders to whom he preached the gospel, had the highest veneration for him. In 1731 the King of Denmark recalled all his subjects from Greenland. Egede alone remained with all his family. The king sent thither again in 1734, and at this time the commerce of Greenland is carried on by the general company of Copenhagen, which every year dispatches three ships to that country.

The coasts of Greenland are difficult of access on account of the shelves and ice which surround them. It is even affirmed that Frobisher's straits are at this day so full of ice, that its existence is disputed. The eastern part of Greenland, which is opposite to Iceland is entirely inaccessible, owing to the ice floats which come from Spitzbergen, and which even shut the passage sometimes between Iceland and Greenland, which is thirty-five leagues wide. This happened in 1766, in that year it has been already observed the fishing vessels were never able to double cape North.

The climate of Greenland is cold, and the weather very inconstant and variable. In the vallies, the ground consists of marshes and turf, and the mountains, which are so many sharp rocks, are covered with ice and snow; trees are met with here in no greater abundance than in Iceland. There are in Greenland several mountains of Amianthus. Very small white hares are found here, and rein-deer, but which have no resemblance to the Lapland rein-deer. The foxes there are grey, white, and blue; bears are met with, but which no ways resemble the bears of other countries, they have more suppleness, and are more nimble. No other birds are seen but those called Riper by the Icelanders, which build their nests in the highest rocks; but as well as in Iceland, there

there are quantities of aquatic fowl. The rivers are full of trout and salmon, and on the coast plenty of fish and whales are caught.

The Greenlanders are small of stature, gross and fat, they have all of them black hair, and red and brown countenances; they are subject to colds in the head, to the scurvy, to complaints of the eyes and the breast. They knew nothing either of physicians or surgeons, they have priests, who serve them as well for philosophers and doctors, for whom they entertain the highest respect, and whom they frequently consult. The language of the Greenlanders much resembles that of the Esquimaux Indians, who inhabit North America. Their dresses are made of birds' feathers, rein-deer skins, and seals skins sewed together with the guts of them. The Greenlanders have huts for the winter, and in the summer live in tents; their huts are similar to those of the poor Icelanders; their tents are made of seals' skins. They make but one meal which is at night. They live upon hares, kids, sea-dogs, different sorts of birds, and fish, and drink nothing but water. Neither arts nor sciences are to be met with among the Greenlanders; their trade consists in lard, whalebone, unicorns' horns, kid skins, rein-deer, sea-dogs, and foxes. They take, in barter, linen and other necessaries. These people have a sort of religion; they acknowledge a supreme Being, believe the souls of the dead ascend to heaven, and go a hunting there, and that the bodies remain to rot in the earth; women are buried alive as soon as they appear to be in a dying state.

The above is all that is most interesting of the history and manners of the Greenlanders, there remains I should speak of their boats for fishing, and their manner of fishing and navigating. Hunting and fishing are the only occupations of a Greenlanders. They fish in their lakes, rivers, and rivulets, but their principal fishing is in the sea; where they catch whales, unicorns, and sea-dogs, cod, and other fish, which abound upon the coast. Their hooks were formerly of bone, but they have steel hooks now which the Danes bring them. Their lines are made of small splinters of whalebone, and their casting nets of deer's guts twisted, the harpoon which they use for striking the whales, is furnished with a forked bone, or a pointed stone, some have also harpoons of iron, which they barter for with the Danes giving them oil and grease in exchange. As these poor people have but little wood and iron, they make use of the precaution of fastening to the middle of every harpoon which they throw, the bladder of a sea-dog, that if the harpoon should not strike the fish or detach itself from it, it may float on the water, and be readily found again, this expedient was known to the fishermen of the Atlantic Ocean, for Opian in his *Haliæuticon* speaks of it, lib. V. v. 177. "They dart, says he, large facks blown up by the breath, and fastened to a cord, immediately at the fish, as it is about to plunge." The arrows which the Greenlanders use, are armed as well either with bone or sharp stones, and they exercise themselves in drawing the bow, from their tenderest infancy. The inhabitants of the new island on which M. Bougainville landed lately in the South Sea, not having any iron, make use of bone for heading their arrows, of scales and shells for knives, and sharp stones for felling of trees; these examples shew that necessity is the mother of invention, and that industry is every where alike. The canoes or boats, in which the Greenlanders embark for the fishery, are made of wood fastened together by traverses, joined with thin slips of whalebone at different distances. They are lined with the skin of seals, well sewed together with animal fibres instead of thread, and the joints are well greased to prevent water from penetrating. These canoes are of different sizes. Some are capable of carrying twenty persons with their arms and baggage; and a good quantity of fish or whales' blubber. These canoes have a sail made of the bowels of the whale, split and dried, and sewed

one to the other. Historians inform us, that this mode of navigating is common among all the northern people that have been discovered. Scheffer cites several examples in his work, *De Militia Navali Veterum*. The *Museum Regium Danicum*, and the authors which M. Hæfæus refers to in his dissertation de *Leviathan Jobi* may be consulted. I have observed that the Greenlanders had no knowledge of arts and sciences. They are unable to count farther than twenty-one. They count by moons. It is by the course of that planet they compute the return of the whales, and other fish to their coast.

The fifteenth of June, I sailed from Patixford to go to Norway; it was during this run that I founded, and made the observations on the Shetland islands, and the Orcaades, which I have before detailed to the reader; I passed south of Fair Isle in the little Tuns, and afterwards directed my course towards the shores of Norway.

The first of July, in the morning I made land. I took the latitude at noon, five leagues north of the rocks or islands which are called Utières; and found these islands to be placed too far south by 15' in the Neptune. On the Utières, pilots are to be met with for the Berghen roads. I shall not enter into any further account of the bearings of this coast, all that was necessary to say having been mentioned before. At two o'clock in the afternoon, being about three leagues from shore, Norwegian pilots came on board, who made me luff up to make the passage of Rooth-holm; but the wind, which blew but gently from the north, at length entirely died away, and we had calm all the night long.

The second, at three o'clock in the morning, a feeble wind arose in the N. E., with a thick fog: we luffed under the land, keeping always a league from shore; and by ten o'clock it clearing up, we entered the above-mentioned passage of Rooth-holm, through which I passed the year before; but instead of proceeding up it as far as Ingeson, as on our first voyage, we anchored in the port of Brandfloom, which is west of Ingeson: it is larger, and the entrance more commodious. The entrance of Brandfloom is known by an island, in the shape of a pye, at the opening of the port, and which is very healthy: three vessels of war may moor there in safety. There is always a fine sea, and no wind is felt there. This port, is to starboard on passing to the north of Bomel; it is possible to enter it by any wind from the N. W. to the E. A vessel mooring there should cast anchor in fifteen to twenty fathoms, with gravelly bottom, and send a small anchor with a tow-line on shore from the stern, south of the stream-anchor.

The third, it rained, the sky was overcast, and the wind blew fresh from the south. I failed at two in the afternoon to get up to Berghen. After proceeding three or four leagues a calm came on, and we were obliged to be towed by all our boats to get to an anchorage.

The fourth, in the morning, a light wind arose from the S. S. W.: I got under sail, and anchored at Berghen at half past two, in the same place I had done in the frigate *La Folle*. After having taken in what provisions and refreshments I required, I left Berghen on the twenty-fourth of July, and went out through the northern passage, as I had done the year before to return to Iceland.

The thirtieth, at night, considering myself twelve leagues S. E. of Langerness, the wind northerly, with fog, I founded, but found no bottom, and brought-to. I ordered the officer of the watch to sound every two hours during the fog, and to steer W. N. W. if it dispersed sufficiently for discerning the distance of three leagues.

The thirty-first, at five in the morning, we saw land; I continued my course to get near it, but the wind blew very faintly from the north. At noon I found the latitude 66° 26'. We saw in the afternoon a number of doggers, or fishing vessels, all of whom that

that I spoke told me there was nothing new in the fleet. We had seven or eight days of fine weather, which I employed in founding and taking bearings.

The tenth of August, seeing the appearance of bad weather, I got off the coast.

The twelfth and thirteenth, we had a gale of wind from the S. W., with a terrible sea. We brought-to with the stay-fails set, and in this attitude my vessel bore very well. From the thirteenth the wind was continually changing, with foggy weather; at length, on the nineteenth, seeing the weather did not clear up, and that the season was advanced, I run for the Shetland islands.

The twenty-fourth, being by log fifteen leagues E. N. E. of Boquenefs, I founded and found sixty fathoms water, muddy bottom. I continued my course four leagues, on the W. N. W. tack, and found, on founding, seventy fathoms water, with a muddy sand. I pursued my way under the same breeze, and considered myself four leagues east of the middle of cape Boquenefs; I did not perceive it; I founded and found fifty fathoms water, bottom fine sand mixed with mud: I then steered S. quarter S. E. to fall in with the Dogger-bank, with a very fresh breeze from the north, as the horizon was clear, and cape Boquenefs very high, and as I had spoken to several herring-fishers, who told me they were twelve leagues from land, I am surpris'd at not having seen Boquenefs, and I thence conceive it to be more north than is marked in the French chart. This chart places it in lat.  $57^{\circ} 32'$ , but the Dutch charts place it in lat.  $57^{\circ} 58'$ . At the point of Boquenefs is a small bank, which the Dutch call Vatterburg, which signifies rat's-tail, on account of its figure. On this bank there is at low water three fathoms water; there is a passage a league wide between the bank and the shore. South of Boquenefs an island is perceived, and several rocks, and near them there is anchorage in ten fathoms water, sheltered from all winds from the north. The currents run south along all these coasts.

The twenty-sixth, at noon, I took the soundings on the Dogger-bank, and from that instant I did not cease heaving the lead till I reached the banks of Ostend. As the detail of the different courses I took in founding would be tedious, I shall only describe the founding, and the points of latitude and longitude.

TABLE OF SOUNDINGS FROM THE NORTH-WEST EXTREMITY OF THE DOGGER-BANK TO THE BANKS OF OSTEND.

Lat.	Long. W. from Paris.		Fathoms.
$55^{\circ} 9'$	0 59	grey sand with black spots	26
55 3	0 55	same bottom	21
54 59	0 52	same	20
54 56	0 50	flint and small stones	18
54 53	0 47	ditto	14
54 50	0 39	ditto	15
54 53	0 34	ditto	18
54 54	0 19	ditto	18
54 48	0 21	ditto	18
54 44	0 14	ditto	17
54 39	0 7	ditto	15
54 35	E. 2	ditto	15
54 33	0 6	fine sand and shells	14
54 31	0 9	fine sand	12
54 30	0 18	same, extremity of Dogger-bank	18
54 20	0 33	fine white sand and shells	26

$54^{\circ} 7'$



Lat.	Long.	E. from Paris:	Fathoms.
54° 7'	0	41 large sand and small pebbles	28
53 54	0	40 same bottom	24
53 50	0	40 muddy sand	31
53 47	0	39 same	22
53 35	0	32 same	20
53 17	0	23 fine red sand mixed with black	18
53 10	0	21 the same	25
53 7	0	21 the same	20
53 5	0	20 fine white sand (white bank)	17
53 0	0	18 the same	22
52 46	0	15 fine grey sand	28
52 26	0	46 red and grey sand	25
52 14	0	47 same bottom	17
22 10	0	40 fine sand	19
51 50	0	28 sand and small gravel	20

The variation of the needle 19°.

I traversed the Dogger-bank, and the banks south of this first, taking soundings every hour, of which the table is annexed. Vessels which are passing over the Dogger-bank should take the middle of it as much as possible, for on the eastern side the currents are violent, and run to the Catagat; and on the western side there is no more than eight or nine fathoms water, which occasions surges so much the more dangerous, as the bottom is large gravel and small pebbles. South of the middle of the Dogger-bank there is twenty-five to thirty fathoms water, muddy bottom. Ten leagues south of the middle of the Dogger-bank is the *white water*; the bottom is of white sand, and there is sixteen or seventeen fathoms water. Five leagues east of this bank the Well-bank is met with, the bottom of which is of stone; there are eighteen fathoms water on it. West of this bank the bottom, which is a yellow sand and black gravel, increases to twenty-two fathoms. A little lower down are the Lemon-banks, very dangerous; on these there is no more than one fathom at low water. Many vessels are annually lost there. The middle of Lemon is about seven leagues N. N. E. of Yarmouth. The banks of Yarmouth also are to be guarded against. By all that I have observed, it must be evident that the west side of the Dogger-bank is very dangerous. In calms, ships anchor on the Dogger-bank to wait for wind and tide. The fishing vessels of Dunkirk, decked boats of thirty-five tons, anchor there in all weathers; they pay out three hundred fathoms of cable, and meet frequently dreadful gales of wind while at anchor. By accident sometimes a vessel is lost in this manner: the vessels on tacking fall foul of their cable, and on the after-tack run again upon, when, should the cable pass under the keel, the vessel is sometimes overfet.

The twenty-eighth of August, at three o'clock in the morning, having soundered and found twenty-four fathoms water, with sandy bottom, and being within the first of the Flemish banks, I cast out a small anchor to wait for the tide. At six o'clock the wind blew fresh from the E. S. E. I set sail and steered S. S. W. At nine o'clock I saw the towers of Ostend, which bore S. quarter S. W., five leagues distant. I continued running S. S. W., on account of the flood running strongly to the east. At noon the towers bore south, two-thirds of a league from me. I fired three guns to cause pilots to come on board, who were remiss; and at half past noon I entered between the jetties. The tide began to ebb from the port, which made me run the hazard of being driven on a

bank to starboard on entering. Luckily a sloop belonging to the port was there, which quickly carried a lashing to the moorings of the eastern or larboard side of the jetties on entering. On coming from the north to make Ostend, two towers at first are distinguished, the largest of which has a steeple, and belongs to the parish church; the other, which is terminated by a gallery, is that of the clock of the town-houfe. In making the land the one must be kept in line with the other, until you reach the buoy, which is at the western extremity of the traverse, on which is a little red flag; this must be kept to larboard: you then steer for the eastern jetty, which is the safest, and which you must keep close to, whether in coming in or going out. At high water you pass over the Stroom and the Traverse: on these two banks the water rises eighteen feet. A pilot, kept for the purpose, takes care at half-flood to hoist a small blue flag, in order to shew that small vessels can enter. To give information to large vessels that they may enter, he hoists a large blue flag, on which there is an eagle. When none is hoisted, it is a sign of there not being sufficient water; in that case, if the ship be at sea, she must either tack or cast anchor: a vessel may anchor in the roads, or moor on the Stroom; and W. N. W. of the Traverse, in six or seven fathoms water, with sandy bottom. The spring-tides rise nineteen feet, and neap-tides fourteen feet. At low water there is but six or seven feet on the Stroom. The mode of avoiding it is to keep the two towers open, by about the space of the size of the largest tower, which must be kept to the east. At the eastern point of that bank there are three fathoms water. There is only three feet water on the Traverse, or bar, and even but two a little east of the jetty, at the end of the moorings. In short, to enter Ostend, great attention must be paid to the time of high water, which is at twelve o'clock in that port, and new and full at three o'clock upon the banks out at sea. Attention must be paid as well to the flood running with rapidity E. N. E., on which account a ship should steer a little within the eastern jetty, and manage the sails according to the wind. The entrance of the port, or of the jetties, is S. S. E. and N. N. W.; but after having passed the bank on the starboard quarter on entering, the port makes an elbow, and bears to the S. S. W. If a vessel be obliged to enter into port without a pilot, and if the wind be strong, she must be ready to cast anchor on the starboard side as soon as she has passed the bank which is at the entrance of the port, and laid the vessel S. S. W.; for in case of not anchoring, she would be carried away by the current to the mud-banks at the bottom of the port. Ostend is very commodious for every ship under forty guns; but it keeps filling up every day, particularly since a dam has been thrown up to prevent the overflowing of Polder St. Catherine, which is nearly two thousand five hundred acres of new well cultivated land. In this space, lately overflowed by the tide, the finest basin in the universe might be constructed, by forming a sluice in the middle of the dam, made thirty years ago to oppose the inundation. The Ostenders will be able to cleanse and excavate their port as much as they please by means of the waters which they may dam up after flood in the Sandfort. In respect to the bank on the inside of the jetties to starboard on entering, it is easy to destroy it, by making an elbow upon the eastern jetty to change the direction of the drifts, by an angle of reflexion equal to the angle of incidence: the waters of the fine sluice of Schlick, although very distant and badly placed, would be sufficient to carry away the bank. If this sluice had been placed nearer to the trading port, at the entrance of the canal of Bruzes, its defence and its use would have been united; instead of which, it is of very little service where it is towards cleansing the port, and very difficult to protect from the attacks of an enemy. The town of Ostend is small, but very pretty; it rendered itself famous during the wars of the Low Countries. Ostend takes its name from its situation; as it is at the extremity of Flanders, on the eastern side, it is called

Ostend

Ostend (East-end). Ostend particularly signalized itself by the siege which it sustained in 1601 against the archduke. This siege, which lasted three years, began in the month of July 1601; and the town did not capitulate until September 1604. There perished during the siege fifteen colonels, seven marshals, five hundred and sixty-five captains, eleven hundred and sixty-six lieutenants, three hundred and twenty-two ensigns, four thousand nine hundred and eleven serjeants, nine thousand one hundred and sixty-six corporals, six hundred and ten anspassades, fifty-four thousand three hundred and sixty-six soldiers, six thousand and eleven sailors, eleven hundred and ninety-six women and children; making in the whole seventy-eight thousand persons and upwards. Ostend only began to be fortified in 1572. It was however a town known for several ages before; for it is seen in the grand Flanders Chronicle, that Robert de Frise, eighteenth count of Flanders, died in 1093, after reigning twenty-two years, and built thirty churches, dedicated to St. Peter, the first of which was erected at Ostend. The abridgment of the Flemish Chronicle speaks also of Ostend, in mentioning Philipps Elfsaten, sixteenth count of Flanders, who died in 1191, and who caused to be hung and exposed along the coast, from Blankenberg to Ostend, eighty Norman gentlemen, who had seized upon some ships belonging to the princeps of Portugal his wife. In the time of Philipps Elfsaten, there was taken on the coast near Ostend a sea-monster, forty feet long, with eight large fins. Jaques Marchantiers, in his description of Flanders, book I. page 79, says, in speaking of this monster, *Rostro aquilino, cristâ gladiata*; the expression *cristâ gladiata*, makes me conceive it to have been a kind of sword-fish; perhaps it was a particular species.

After repairing my vessel at Ostend, and refreshing my crew, I made dispositions to continue my course to Brest, the twelfth of September.

The thirteenth, at noon, the wind blew pretty fresh from the east, the weather overcast, I left the port, keeping close to the eastern jetty. When outside the jetties we steered west, to pass to the south of the buoy, which is at the extremity of the bank before the port. After passing this buoy we bore W. N. W. and W. S. W., coasting along shore, three quarters of a league distant, till we got opposite to Nieupoort, which we rounded, keeping rather farther from shore. At four o'clock we directed our course south, to avoid the point to the east of Brac, and gain the entrance of the road of Dunkirk on the eastern side. When wide of the Brac on the east, a vessel is desirous of nearing the land to gain the channel, the tower of St. Catherine should be kept in line with the two towers of Bergues, keeping however those of Bergues a little to the east of that of St. Catherine, which is the only tower on the coast in this neighbourhood. Knowing by sounding, or the increased depth of water, that we had passed the point east of the Brac, and that we were in the channel at the entrance of the road, we steered N. W. and N. quarter W., under top-sails, to look for our anchorage. At half past four o'clock we cast anchor in seven fathoms water, with a bottom of muddy sand, and we moored east and west, the same bottom and same soundings. Being moored, the battery bore S. quarter S. W., and the tower of Dunkirk S. I ought not to forget to observe, that in going from Ostend to Dunkirk there is a channel more secure and easy than that which we took, particularly for a vessel like l'Hirondelle: a vessel has need to coast the shore at no more than a quarter of a league distant, and take care in rounding the bank which is at the entrance of Nieupoort. The road of Dunkirk is good, on account of there being but little water (six, seven, eight, and nine fathoms), and the ground holding well. This road would hold the largest fleet; it is shut only by a sand-bank, called the Brac, on which at low water there is but one fathom water, and which in some places even is dry. The winds the most to be apprehended in this road are those from

the W. N. W. to the N. E. The sea there frequently runs very high, particularly when the wind blows from the W. N. W., on account of the surges entering by the western passage. This is the most likely wind to make the anchors drive and break the cables, especially in flowing tides, for then ships have at the same time to sustain the power of the wind and the impulse of the flood.

Dunkirk is celebrated for its antiquity, its port, and the revolutions it has undergone. About sixty years before the Christian æra, the people inhabiting the coasts of the sea where Dunkirk now is situated, were called Diabintes. This name, which is latinized, is derived from the German, in which language it is thus written : *Die hap inden* ; signifying, navigating in a port of a secure form, or navigating in a port of the shape of a hatchet. The Morini were their neighbours, that is to say, the people of Boulogne, Calais, St. Omer, Therouane, and Aire ; and those of Bergues, Honfchoot, Furnes, Dixmude, and Nieuport, were called Menapii : these three people went to meet Cæsar on his conquering Gaul, and gave him battle on the banks of the Sambre : it remained for a long time undecided, and Cæsar gained it only by means of a considerable reinforcement which he had received during the engagement ; notwithstanding this his loss was so great, that he was unable to subjugate these people until the following year, when he again fought with and defeated them. Cæsar conquering them, left them Corvinus for governor. The Romans constructed several fortresses, among others that of Cassel, six leagues from Dunkirk inland, where the governor of the Low Countries used to reside. The village of Mardyck, which has been made a good fortress, is situated a league and a half, or thereabouts, from Dunkirk ; it has given the name to several camps and battles ; it was formerly the celebrated Portus Icius, of which Cæsar speaks in his Commentaries, who has even retained the name ; the Sieur Chifflet has drawn a plan of it, with an ample description. He says, that in the time of Cæsar the greater part of this country was covered with wood, and overflowed in different parts, and that there were only some banks or roads raised above the marshes, which led to the sea-shore ; the sea then extended as far as to a town called Cithieu. This town was afterwards named St. Omer's, from the name of a bishop of Therouane, who built a church and several houses there for the residence of the poor of his diocese, and to enable them to live by the trade of the place. After his death, the relics of the saint being transported to Cithieu, his name was given to the church, and the town which was afterwards built.

St. Victricius, bishop of Rouen, was the first who came to preach the Christian religion on the coast of Dunkirk, in 396. The last of the Romans were driven out by Meroue, who subjugated this province to France, in 450. St. Eloi came to preach the faith in 646, and made some stay there, which brought over a number of profelytes ; he built a pretty large church there on the downs, where for some time a number of fishermen and poor people were collected together. This place was soon frequented by a number of the Christians of the neighbourhood : the name of Dunkirk was given to this church, and to the town which was afterwards built on that spot ; the word *kerke* signifying church in the Teutonic language, from which the Flemish is derived.

The Low Countries were governed for a long time by foresters appointed by the kings of France. Baldwin, in 864, was forester of Flanders, or the Low Countries, having run way with and married Judith, daughter of Charles the Bald, who forgave him his conduct, and sanctioned his marriage ; he became the first count of Flanders, the king making this country a county reserving a homage to France. The number of the inhabitants of Dunkirk augmenting every day, from the commodiousness of its natural port, Baldwin III. surrounded it with a wall in 906, to protect the inhabitants from the inroads of

of banditti. They addicted themselves to trade and fishing, and embellished and added to the convenience of the port. Philip of Alface built several vessels of war there, to go with to the Holy Land. In 1170 the Norman pirates, for the most part gentlemen, interrupted their commerce, by stopping their vessels in the channel; they detained and even plundered the Princess of Portugal, who was on her voyage to marry Count Philip in Flanders. Philip fitted out a strong fleet at Dunkirk, which he sent after them, and was fortunate enough to take them all and carry them into Dunkirk, where they were condemned to death, as I have before observed in speaking of Ostend. This defeat endeared the Dunkirkers to their sovereign, who granted them many privileges and exemptions. In 1232 Dunkirk being sold to Godfrey de Conde, bishop of Cambray, on condition of reverting after his death to the count of Flanders, he very much enlarged and deepened the port, and constructed two jetties, proceeding a good distance out to sea.

Dunkirk was separated from the county of Flanders, and erected into a private lordship by Robert of Bethune, in favour of Robert of Cassel his son, who built a castle, and established a magistracy. He founded three brotherhoods of cross-bow-men, bow-men, and gunners, to exercise the citizens, and perfect them in the use of arms: dying without a son, his only daughter Jolanda married a duke of Bar. This alliance gave its first arms to Dunkirk.

In 1382, the people of Ghent revolting from their sovereign, called the English to their assistance, and seized upon the town of Dunkirk; but Charles VI., King of France, retook it the same year, and restored it to its lord.

In 1403, the walls and fortifications, damaged by the sieges it had sustained, were repaired, and the ditches greatly deepened.

In 1436, the English took Dunkirk.

In 1440, a church was built at the foot of the tower built a short time before, to serve as a pharos and belfry for the parish.

Among many great men which this town has produced is Nicholas Vanderhelle, a great theologian, four times *recteur magnifique* of the university of Louvain; Cornelius Schepper, a great philosopher and politician, who under Francis I. was professor of philosophy and mathematics at Paris. He was chosen by Charles V. to watch over his interests with the major part of the princes of Europe, and was twice appointed ambassador to Sultan Soliman: he was greatly beloved by the learned.

The fishery being from earliest time the principal trade of the town, in 1532 five hundred buxses or vessels, from fifty to sixty tons, designed for fishing in the north, belonged to this port: every one of these vessels had among the lines with which they fished, one called the holy line; all the fish caught by it were sold for the benefit of the church: out of these gifts the church, which was burnt in 1558, was rebuilt in 1560.

In the war between France, Spain, and England, in 1558, marshal Termes with seventeen thousand men set down before Dunkirk: there were in garrison in the place at the time no more than four hundred men; it was taken by assault and pillaged, and many of the citizens were massacred. Bergues suffered the same fate. The pillage in these towns and in the neighbourhood was so great, that a cow was sold in the French camp for two or three sous, and thirty-eight horned beasts for a gold crown: the bells were even broken, in order to take away the pieces, the enemies of France having collected an army in the neighbourhood of St. Omer's, for the purpose of attacking the French. Marshal Termes was disposed to retreat, and set fire to several parts of the town, in order to complete the destruction of what had escaped the rage of the soldiery; the church, the convents, and almost the whole town, were consumed by the flames, as well



as several vessels were laden with booty, which were detained by contrary winds in the port. After these excesses he departed to join the main army, but Count Egmont, the general of the Spaniards, came up with fifteen thousand troops, and a large number of peasants, who cut to pieces the army of Marshal Termes, making him with the chief of his staff prisoners.

In 1583 the town of Dunkirk was taken by the confederates, and retaken the same year by the Duke of Parma, who greatly repaired the port, and built there several vessels of war, among others, fourteen commanded by vice-admiral Wacken, which made many Dutch prizes; the following year, the proprietors of these vessels made a number of prizes, which they conducted into port, notwithstanding it was blockaded by a Dutch Squadron. Charles Dauwere and his son John were the chiefs of these fleets of privateers; they were both of them intrepid, and very skilful in manœuvres. This caused the Squadron of the Dutch, which had cost a great deal for little advantage, to draw off. About this time the Spanish fleet arrived in the channel, named the *Invincible*, which was dispersed by a storm; many ships perished at sea, others were lost on the shores of France and England, and the sad remains of this fleet were fortunately conducted back to Spain through the skill of Michael Jacobs, a Dunkirker, an excellent seaman; nevertheless the Dunkirkers did not cease fitting out privateers, and making considerable prizes of Dutchmen and Zealanders. These riches drew a number of foreign sailors to Dunkirk. The ardour of the Dutch for blockading Dunkirk was redoubled, sending even a hundred vessels before it; which however did not hinder the privateers from stealing out under favour of night, and, owing to the lightness of their vessels, proceeding in making prizes in the North Sea. They were attacked by a large ship of war, commanded by the Vice-admiral Anthonisen, but who was not then on board. In his absence, the commander seeing himself disabled, half his crew wounded, and the enemy already boarding his ship, set fire to the powder-room, and blew himself up; at the same time doing considerable damage to the Dunkirkers. The town was fortified with new works, and privateering continued. In 1593, one captain of a privateer brought into the port of Dunkirk as many as thirty masters of busses and other vessels, which he was satisfied with ransoming for more than two hundred thousand livres; an enormous sum for that age. Another, named Koster, returning to Dunkirk after ransoming several vessels, was surrounded by a Dutch fleet; he fought desperately, and disabled several vessels; at length, pressed upon at all sides, he set fire to the magazine, and blew himself up, together with the ships which were boarding him.

The Cardinal Archduke Albert of Austria, who replaced the Duke of Parma, being desirous of signalizing his accession to the government of the Low Countries, laid siege to Calais in 1596, which he carried in a little time; this acquisition was of great advantage to cruising against the enemy. The Dutch, interested in hindering, sent fourteen large vessels to anchor before Dunkirk, while nine others kept the sea to intercept the vessels desirous of entering. Calais was given up to the French by the treaty concluded in 1598, between France and Spain; in spite of the Dutch Squadron prizes arrived in safety, and the engagements which took place, were fought with so much the more obstinacy from each party hanging their prisoners.

In 1609 a truce was concluded for twelve years between the Dutch and Spaniards. At the end of it the privateers, assisted by nine Spanish vessels, ruined the Dutch commerce.

In 1622 the citadel of Mardyck was constructed to shelter Dunkirk from the insults of its enemies. In this year John Jacobson of Dunkirk, a captain in the navy, commanding the *St. Vincent* of a hundred and fifty men, on going out of port with two Spanish



Spanish vessels commanded by Spaniards, was attacked about four hours after leaving the jettys, by nine Dutch men of war, which surrounded and engaged the *St. Vincent*; his two companions made their escape. Jacobson maintained the unequal fight for thirteen hours, sunk two of the vessels, and did great damage to the others, but, reduced to two or three men, the rest being either killed or wounded, he was boarded by fifty of the enemy, when he set fire to the magazine, and blew them up with himself: the explosion was so violent, that one of the Dutch vessels was dismasted, and another was in great danger from the falling of some heavy pieces of brass cannon which had been blown up, and alighted on the deck; all the rest were in a sad plight. The enemy in this engagement lost more than four hundred men. This loss, far from dispiriting the Dunkirkers, only inflamed them with a desire to revenge their companions. The *Sieurs Wandewalle*, father and son, equipped eighteen vessels, which, in conjunction with others, made more than six hundred prizes, of which six were vessels of war of the largest size; from the prizes captured by four vessels only of *Wandewalle*, the tenth, which belonged to the king of Spain, came to more than a hundred thousand florins; and in spite of the blockade of the town, which the Dutch maintained continually, the cruizers ruined their fishery and their trade. In 1625 the profits of the privateering were estimated at more than 10,000,000 f. In 1629 the Dunkirkers made prize of ninety-one vessels richly laden; without including ransoms, and ships which they burnt in Norway and other places.

Matthew Rombout, a Dunkirker, vice-admiral of the Spaniards, fought Admiral Peter Hein; the latter lost his life. He was much regretted by the Dutch. Tired at length with their continual losses, after depriving Admiral Drop of his commission, who commanded before Dunkirk, they augmented their fleet to eighty sail, in order to blockade the place entirely; but, getting too close to Maerdyck, the cannon from the fortresses played on them with so well directed a fire, they were fain to retire, after sustaining considerable damage.

War being declared in 1635 between France and Spain, the Dunkirkers made prize of fourteen French ships at once, laden with wine; and some days after, Captain Nordman captured eleven others. Admiral Colaert, a Dunkirkman, commanding seventeen vessels of war, burnt more than a hundred and fifty Dutch buxses, convoyed by a squadron; the admiral's ship itself was destroyed, and the vice-admiral was carried prisoner to Dunkirk. One of the most considerable prizes was that of the famous French pirate Loutre; she mounted eighteen guns, had made prize of seventeen vessels, which had been sunk after taking out their most precious effects; there was on board this vessel seventeen thousand florins, six thousand pistres, one hundred and twenty-two pounds of silver in ingots, a coffer full of silver plate, and a great quantity of precious stones.

In 1636 the same Colaert took and conducted to Dunkirk the Dutch admiral Haute Been, or Wooden-leg. This Colaert was in the Spanish service for thirty-six years, took from the enemy one hundred and nine vessels, and twenty-seven ships of war, bearing collectively more than one thousand five hundred pieces of cannon; he died at Dunkirk in 1637. The great number of prisoners brought into the town caused a plague, by which numbers of persons perished. The owners of privateers made fortunes notwithstanding Van Tromp commanded the blockade of the port. In 1640 the circumference of the lower town was enlarged, in order to furnish dwellings for the increased number of inhabitants; so greatly did the equipments from the place attract population.

It was in 1641 that Don Pedro de Leon, governor of Dunkirk, obliged Vice-admiral Matthew Rombout to go out of port with his squadron to assist the Spaniards against

the Portuguese, who had revolted. This governor, a general officer on shore, knew nothing of the difficulty of passing through the enemy's fleet, superior in number, which laid between Gravelines and the town. He would not listen to the representations of Rombout, who, forced to obey, was defeated as he had predicted, and killed in the engagement after having fought with the greatest resolution. A part of his squadron was taken, the other was obliged to fly. His death gave as much concern to the Spaniards, as pleasure to the Dutch, who feared him greatly. A descendant in a direct line of this Admiral Rombout went two voyages with me as a pilot.

In 1642 Joseph Pieters, vice-admiral, being with five vessels and a long-boat in the roads of Vivaros in Spain was attacked at eleven o'clock in the morning by twenty-four French vessels and eight galleys; the French admiral's ship, carrying sixty-six guns, was so ill treated that he was obliged to withdraw. The battle lasted till night, during which the Dunkirk man made shift to escape with his six vessels.

In 1645 the French attacked the fort of Mardyck, which capitulated after six weeks siege. But the governor of Dunkirk having assembled all the seamen and some troops, took it again during a winter's night. It was taken again by the French in 1646, after a siege of twenty-one days. That of Dunkirk immediately succeeded; the Prince of Condé made himself master of it in less than a month, notwithstanding it was vigorously defended by the Marquis de Lede, who was obliged to capitulate, all succour being cut off both by sea and land. He surrendered with military honours.

In 1652, during the civil wars of France, the Archduke Leopold retook it, and gave the government of it to the Marquis de Lede, who had before so well defended it.

In 1656 the English, united with French and Dutch, made war with Spain. The Dunkirkers, joined to those of Ostend, took a whole fleet of English ships, consisting of forty-four sail, and a few days after thirty-three others.

In 1657 Marshal Turenne, with some English troops, took the fort of Mardyck. He gave it up to the English, who sent there a fleet laden with a quantity of materials to fortify and render it in some measure impregnable. They put fifteen hundred men in garrison in it.

In 1658 Marshal Turenne invested Dunkirk, the king joined him with a powerful army. The Spaniards, under the conduct of Don John of Austria and the Prince of Condé, endeavoured to throw succours into the place, but they lost the battle of the Downs; and the Marquis de Lede dying of the wounds which he received, the garrison capitulated on the twenty-fifth of June, after six weeks siege. The next day the Spanish garrison went. The king entered it the same day in the morning, and in the afternoon gave up the place to the English, on condition of suffering the town to enjoy all its privileges; thus in less than a day it saw itself successively under the domination of three crowns. The privateers of Dunkirk and Ostend had taken during the war more than two thousand five hundred vessels. The English caused a strong citadel to be constructed, instead of Fort Leon, and greatly strengthened the town; which was sold to the French in 1662 for the sum of five millions of livres, through the negotiation of the Comte D'Estades. The king made his entry into it the second of December, maintained its privileges, and made it a free port. In 1665 new fortifications were constructed, and the citadel improved. In 1680 the foundations of the Fort Risbau, Fort Verd, and Fort de Bonne Esperance were laid, which were perfected, and projected far out to sea. The king often came to see the works, which lasted from ten to eleven years. The bastion was constructed in 1686.

In 1688 France was at war with the Dutch, the English, and the Spaniards, during which the Dunkirkers fitted out a number of privateers. In 1689 M. Bart, ordered to

escort a fleet of fourteen merchant vessels to Havre, went on board a frigate of twenty-eight guns, and with M. Forbin under his orders of sixteen guns, they met with two English ships of forty-eight and forty-two guns, and fought them sufficiently long to give time to the convoy to pursue its course; but, both wounded, one hundred and forty men disabled, and their vessels complete wrecks, they were taken. The loss of the English vessels was so great, that the command of their vessels devolved to a boatswain's mate, all the officers being killed in the engagement. The two French captains escaped from prison some time afterwards. The first fitted out a vessel and made many prizes. He entirely destroyed the fishery of the Dutch, and made a descent in England near Newcastle, with seven frigates, burnt there two hundred houses, and carried back booty to Dunkirk of the value of fifty thousand livres. Some days after he sailed again with three frigates, cruised in the North, where he took a Dutch fleet, escorted by three vessels of war, fought the latter, took one, and put the other two to flight, after having greatly damaged them. He came back to Dunkirk with the whole fleet, laden with wheat, barley, iron, pitch, &c.

France having purchased a large quantity of wheat in the north in 1694, M. Bart was ordered to go and convoy the fleet, consisting of a hundred and odd sail of vessels. This fleet sailed under escort of three Swedish and Danish ships, and was taken near the Texel on the twenty-eighth of June, by the commodore Hidde Vries, commanding a squadron of eight ships of war; but the twenty-ninth of June, M. Bart falling in with it, attacked the Dutch with so much bravery, that in less than half an hour the commodore was taken, commanding a vessel of fifty-eight guns, another of fifty, and a third of thirty-six were captured, as well as the five others much shattered, which betook themselves to flight and escaped. He retook the whole fleet; he conducted to Dunkirk the three vessels and thirty of the merchantmen, the rest made for their destination in different ports of France. The commodore died of his wounds shortly after his arrival. This service rendered to France at a time of extraordinary scarcity of wheat corn, engaged his majesty to ennoble M. Bart, who had been honoured with the cross of St. Louis, some time before for other exploits.

The eleventh of August 1695, the enemy with one hundred and fourteen sail under the orders of Admiral Barclay, attempted to bombard the town, they sent in several fire-ships loaded with combustibles for burning the forts and jettys; but they were driven back by the well sustained fire of the forts, and by the vigilance of M. Derlingue, who commanded in the harbour, and went out with several boats to grapple the fire-ships, launched against the forts and jettys, and conducted them to stations where they might burn out, without doing any injury. M. Bart commanded at Fort Esperance, M. de St. Claire at Chateau Verd. The enemy threw more than one thousand two hundred bombs, and a number of carcasses between eight o'clock in the morning and seven in the evening without doing any damage: ten bombs fell in the Ribban, they killed an officer there; another bomb which fell in Fort Verd, did no more than dig its grave; one of the enemy's frigates having grounded on a bank at low water, M. Derlingue went with his boats to it, and made prisoners of its crew, in spite of the firing of the enemy. This expedition was expensive to the enemy without profit. The preceding year they made a similar attempt.

In 1696, M. Bart sailed from Dunkirk, and took a Dutch fleet in the north, of one hundred and six sail; sixty-one of which he ransomed, after carrying by boarding five vessels of war, which convoyed the fleet. He was made Chef d'Escadre in 1697; and sailed the fifth of September, with six vessels and a frigate to transport the Prince de Conti to Poland, notwithstanding an enemy's squadron superior in number, which

could not cut him off, he arrived at Dantzig the twenty-sixth, and brought this prince back again to Dunkirk, November the eleventh following; circumstances not having answered the hopes which the Poles had made this prince conceive. While this was happening, the peace of Ryſwick was made; during this war the privateers of Dunkirk had made prizes of the collective value of twenty-two million of livres.

In 1701 war broke out afresh; Fort Blanc was constructed. M. Bart being ordered to fit out a squadron, applied himself to it with such activity, that a pleurisy carried him to the grave, the twenty-seventh of April 1702, aged fifty-two years, and generally regretted. His son Andrew followed the steps of his father; he distinguished himself under M. de St. Pol, who commanded a squadron in the north, and under M. de Forbin, who succeeded M. de St. Pol, he being killed in 1705, in an engagement in which his squadron had the advantage. M. Bart by his services, reached the rank of vice-admiral.

In 1712, peace being concluded, the sluices, forts, and fortifications of Dunkirk were demolished. During this war the Dunkirkers brought in one thousand six hundred prizes; which sold for more than thirty millions of livres, exclusive of vessels carried into other ports of France.

In 1714, the canal and port of Mardyck were dug, to carry off the waters of the country; this port is half a league from Dunkirk to the west, beside the ancient Mardyck. Two sluices were made to admit ships, but in 1717 the largest was destroyed, and only the smaller one of sixteen feet was preserved for letting off the water. By this canal, which ended at Dunkirk, commerce was carried on, but at a heavy expence, in spite of the English. A dam had been thrown across the port, between the town and citadel, but a furious wind having driven the sea with violence against it, it gave way shortly before 1720, and was entirely carried away. Navigation was begun upon it, and forts and jettys, in fascinage, were constructed on it in 1744, and the town was surrounded with a rampart of turf; but the forts were demolished at the peace of 1748. After this peace, a dyke was made to carry off the water from the ditches of the town, which had become stagnant. The last war the sluice of Bergues was re-established, and the basin, and forts in fascinage were constructed close to the sea; but at the peace the forts were demolished, the basin, and the dyke, leaving the sluice of Bergues for carrying off the water.

The twenty-fourth of September, at nine in the morning, having two-thirds of flood-tide, the wind weak from the south, I sailed from the road of Dunkirk to return to Brest, by the channel. We steered at first W. quarter N. W. and W. N. W., to get out of the road which terminates E. and W., with the points of Brac. A vessel is known to be west of Brac, when the belfry de petite Sainte is in a line with the buoy of Mardyck, as well that it is east of Brac, when the belfry of St. Catherine is in a line with the towers of Bergues. After going out of the roads by the passage of the west, and about to make for the Straits of Dover; you must steer W. N. W. and N. W. quarter W. to avoid the Snow, a bank which is dry, and which must be left to larboard; you must neither steer more N. than N. W. quarter W. for fear of falling in with the Breban, on which there is but three feet of water, in certain parts at low water; but no risk is run in steering W. N. W. and N. W. quarter W. You know that you are clear, that is to say, west of the banks, when you have the tower of St. George, which is flat, in a line with a small down, which looks like an island, or when the great tower of Gravelines bears S. quarter S. W. of the compass. At noon on the twenty-fourth, I was in that position, 19 h wind; but having the ebb for me I made way. The tides are twelve hours long at Dunkirk, eleven and half at Calais, and three in the middle of the

*frat.* From noon to six o'clock I bore west, all sails set, the wind S. E. weak. At six o'clock I made Cape Grines, bearing S.  $4^{\circ}$  W. three leagues distant, and the castle of Dover bearing N. N. W. four leagues distant; whence I took my departure, steering W. quarter S. W. and W. S. W.

The twenty-fifth, at day break, I was five leagues from the English coast, and by log I ought to have been eight leagues; the flood-tide, which we had from seven o'clock till midnight, had doubtless carried us to the north. At noon Beachy-head, on the coast of England, bore north by the compass, distant four leagues and a half, I observed the variation  $19^{\circ} 52'$ . From noon till two o'clock we had a weak S. S. W. wind; I steered west; at two o'clock the wind getting round to the W., and the tide ebbing, I steered S. S. W. At six o'clock Beachy-head bore N. N. E. eight leagues distant. At seven o'clock, being high water, and perfectly calm, I anchored a small anchor in twenty-six fathoms water, bottom gravel and broken shells. I then cast the log, which shewed me the tide ran three knots. At eleven o'clock the wind blowing S. S. W. I failed, steering west.

The twenty-sixth at noon, I made Cape Barfleur, which bore S. W. quarter W., seven leagues distant. I took the altitude, and found myself in latitude  $50^{\circ} 0'$ , longitude  $0^{\circ} 18'$  W. of Paris. From noon to five o'clock a weak S. wind. I steered W. quarter N. W. with all sails set. At five o'clock, being the beginning of flood, I cast the stream anchor in thirty-seven fathoms, bottom small pebbles and shells. Being at anchor, cape La Hogue bore S. S. W.  $5^{\circ}$  W. six leagues distant. The tide ran five knots at half past seven.

At eight o'clock, my anchor breaking at the middle of the shank, I set all sails; at the same time coiling all my towing ropes. I steered W. quarter N. W. to stem the current; at ten o'clock I steered W. N. W. and N. W. quarter W. not to get near the Caskets; at midnight perceiving distinctly the fires of the Caskets, I steered W. N. W.; at four o'clock I made a tack to the W. S. W., and at seven o'clock the wind being S. E., I steered S. W. to make the coast of Brittany. The twenty-seventh at noon, I was in latitude  $49^{\circ} 30'$  and longitude  $6^{\circ} 3'$ . The same day at sun-rise I found the variation  $19^{\circ} 45'$ . From noon till four o'clock I steered S. W. The wind fresh from the S. E. At four o'clock perceiving land, which by the tack I was upon I kept from, I stood closer in order to make it before night. At six o'clock the largest of the seven islands bearing S. S. E. four leagues distant, I steered W. and kept all night under easy sail.

The twenty-eighth at five o'clock in the morning, I kept close to shore. At seven o'clock I laid N. and S. of Abrevrack. I continued running along the coast, and at nine o'clock I got into Le Four, where, meeting with contrary winds, I luffed till eleven o'clock, when the flood obliged me to cast a small anchor in twenty-six fathoms water, gravelly bottom, a league to the S. S. W. of a rock called le Four. I failed at five o'clock in the afternoon, but night obliged me to anchor at the Blanc Sablon.

The twenty-ninth, at seven in the morning, weak and variable winds from the south side, I failed and passed by favour of the current against the wind, the great and little e Vinotierre. I anchored in Brest roads at six in the evening, and the next day my vessel entered into port to be disarmed.



THE VOYAGE OF THE RIGHT HONOURABLE GEORGE EARL OF CUMBERLAND TO THE AZORES\*, ETC. WRITTEN BY THE EXCELLENT MATHEMATICIAN AND ENGINEER MASTER EDWARD WRIGHT.

[HAKLUYT, II. 155. Second Part.]

THE Right Honourable the Earl of Cumberland having at his own charges prepared his small fleet of four sails only, viz. the Victory, one of the Queen's ships royal; the Meg and Margaret, small ships, (one of which also he was forced soon after to send home again, finding her not able to endure the sea,) and a small caravel; and having assembled together about four hundred men (or fewer) of gentlemen, soldiers, and sailors; embarked himself and them, and set sail from the Sound of Plymouth in Devonshire, the eighteenth day of June 1589, being accompanied with these captains and gentlemen which hereafter follow:

Captain Christopher Lister, a man of great resolution, captain Edward Careless, alias Wright, who in Sir Francis Drake's West India voyage to St. Domingo and Carthagena was captain of the Hope; captain Boswell, M. Mervin, M. Henry Long, M. Partridge, M. Norton, M. William Mounson, captain of the Meg, and his vice-admiral, now Sir William Mounson, M. Pigeon, captain of the caravel.

About three days after our departure from Plymouth we met with three French ships, whereof one was of Newhaven, another of St. Malo's and so finding them to be leaguers and lawful prizes we took them, and sent two of them for England, with all their loading, which was fish for the most part from Newfoundland, saving that there was part thereof distributed amongst our small fleet, as we could find stowage for the same; and in the third all their men were sent home into France. The same day and the day following we met with some other ships, whom (when, after some conference had with them, we perceived plainly to be of Rotterdam and Embden, bound for Rochelle) we dismissed.

The twenty-eight and twenty-ninth days we met divers of our English ships, returning from the Portugal voyage, which my Lord relieved with victuals. The thirteenth day of July, being Sunday, in the morning, we espied eleven ships without sight of the coast of Spain, in the height of 39°, whom we presently prepared for, and provided to meet them, having first set forth captain Mounson in the Meg, before us, to descry whether they were. The Meg approaching near, there passed some shot betwixt them, whereby, as also by their admiral and vice-admiral putting forth their flags, we perceived that some fight was likely to follow. Having therefore fitted ourselves for them, we made what haste we could towards them, with regard always to get the wind of them, and about ten or eleven of the clock we came up to them with the Victory. But, after some few shot and some little fight passed betwixt us, they yielded themselves, and the masters of them all came aboard us, shewing their several passports from the cities of Hamburg and Lubeck, from Bremen, Pomerania, and Calice.

They had in them certain bags of pepper and cinnamon, which they confessed to be the goods of a Jew in Lisbon, which should have been carried by them into their country to his factor there; and so finding it by their own confession to be lawful prize, the same was soon after taken and divided amongst our whole company, the value whereof was esteemed to be about four thousand five hundred pounds, at two shillings the pound.

\* These isles properly belong to Europe, as lying nearer Portugal than any other country. See Kerston's Modern Geog. vol. i. p. 601.







Seðlabanki Íslands Bókasafn



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